

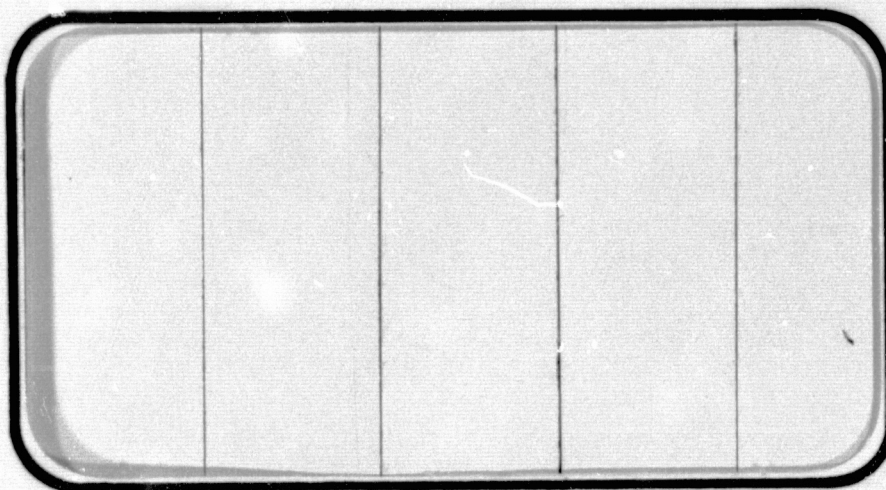
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION



(NASA-CR-141845) AERODYNAMIC RESULTS OF A
SEPARATION TEST (CA20) CONDUCTED AT THE
BOEING TRANSONIC WIND TUNNEL USING
0.030-SCALE MODELS OF THE CONFIGURATION
140A/B (MODIFIED) SSV ORBITER (MODEL NO.

N76-16034

HC \$28.25

Unclas

G3/02 08755

SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT



JOHNSON SPACE CENTER

HOUSTON, TEXAS

DATA MANAGEMENT services

SPACE DIVISION



CHRYSLER
CORPORATION

December, 1975

DMS-DR-2217
NASA CR-141,845

VOLUME 2 of 3

AERODYNAMIC RESULTS OF A SEPARATION TEST (CA20)
CONDUCTED AT THE BOEING TRANSONIC WIND TUNNEL
USING 0.030-SCALE MODELS OF THE CONFIGURATION
140A/B (MODIFIED) SSV ORBITER (MODEL NO. 45-0) AND
THE BOEING 747 CARRIER (MODEL NO. AX 1319 I-1)

by

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Prepared under NASA Contract Number NAS9-13247

by

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WIND TUNNEL TEST SPECIFICS:

Test Number: BTWT 1431/AX 1319 I-1
NASA Series Number: CA20
Model Number: 45-0 Mod/747 Carrier AX 1319 I-1
Test Dates: 9 through 16 October 1974
Occupancy Hours: 115

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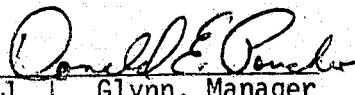
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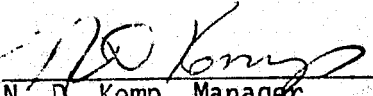
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ABSTRACT

An experimental aerodynamic investigation (CA20) was conducted in the Boeing Transonic Wind Tunnel from October 9 through October 16, 1974. A Rockwell built 0.030-scale 45-0 modified SSV Orbiter Configuration 140A/B model and a Boeing built 0.030-scale 747 carrier model were tested to provide six component force and moment data for each vehicle in proximity to the other at a matrix of relative positions, attitudes and test conditions. Orbiter model support system tare effects were determined for corrections to obtain support-free aerodynamics.

In addition to the balance force data, pressures were measured. Pressure orifices were located at the base of the Orbiter, on either side of the vertical blade strut, and at the mid-root chord on either side of the vertical tail. Strain gages were installed on the Boeing 747 vertical tail to indicate buffet onset.

The 747 carrier was varied through angles of attack (measured with respect to its FRL) of 0°, 2°, 4°, 6°, 8°, and 10° and varied through sideslip

angles of 0° , $+5^\circ$, and -5° . Elevator settings were also varied.

The SSV Orbiter model was varied through angles of attack of 6° , 8° , 10° , 12° , 14° , 16° , and 18° and varied through sideslip angles of 2.5° , 0° , -2.5° , -5° , -7.5° , -10° , and -15° .

Vertical displacements of 0", 1", 2", 3", 5", 7", 9", 11", 13", 15", 18", and 21.6" (model scale) were tested. Longitudinal movements of 0", 3.6", and 7.2" (model scale) and lateral displacements of 0" and 3.6" (model scale) were tested to simulate various separation positions. Orbiter elevator deflections were also varied.

Orbiter support system tare and interference effects were determined utilizing various support and image support strut configurations. Carrier support system tare and interference effects were determined during test CA5.

The Orbiter tail cone and carrier models were provided by The Boeing Company. The Orbiter model was provided by Rockwell. These were the same models used earlier in test CA5.

This report for CA20 consists of three volumes: Volume 1 - data figures 1 through 25; Volume 2 - data figures 26 through 39; Volume 3 - tabulated source data.

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- (B) CN, CLM, CA, CL, CD, CY, CYN, CBL versus DZ
- (C) CY, CYN, CBL versus BETA0
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NOMENCLATURE

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Description</u>
b	BREF	reference span, in
BSTA	XC	longitudinal carrier station, in
BWL	ZC	vertical carrier station, in
\bar{c}	LREF	mean aerodynamic chord, in
C_A	CA	axial force coefficient
C_D	CD	drag coefficient
C_{ℓ_B}	CBL	body axis rolling moment coefficient
C_{ℓ_S}	CSL	stability axis rolling moment coefficient
C_L	CL	lift coefficient
C_m	CLM	pitching moment coefficient
C_{n_B}	CYN	body axis yawing moment coefficient
C_{n_S}	CLN	stability axis yawing moment coefficient
C_N	CN	normal force coefficient
$C_{p_{B1}}$	PB1	Orbiter base pressure coefficient for orifice no. 1, see Figure 2c
$C_{p_{B2}}$	PB2	Orbiter base pressure coefficient for orifice no. 2, see Figure 2c
$C_{p_{B4}}$	PB4	Orbiter base pressure coefficient for orifice no. 4, see Figure 2c
$C_{p_{CAV}}$	PCAV	Orbiter cavity pressure coefficient

NOMENCLATURE (Continued)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
$C_{P_{EB_1}}$	LHLS	coefficient of pressure measured on fuselage at left side of vertical tail
$C_{P_{EB_2}}$	RHLS	coefficient of pressure measured on fuselage at right side of vertical tail
$C_{P_{SC}}$	PSC	carrier cavity pressure coefficient
$C_{P_{S_1}}$	LHVERT	coefficient of pressure measured on left side of Orbiter strut
$C_{P_{S_2}}$	RHVERT	coefficient of pressure measured on right side of Orbiter strut
C_Y	CY	side force coefficient
C.G.		center of gravity
C.R.		center of rotation
FRL		fuselage reference line
α_O	IORB	Orbiter incidence relative to carrier FRL, deg.
L_B	LREF	reference body length, in
MACH	MACH	Mach number
M.R.C.	XMRP, YMRP ZMRP	moment reference center, in
MS		model station, in
P_{Bi}		base pressure measured at station i, $i=1,2,4$, psia
P_{EB_1}		pressure measured on Orbiter fuselage surface on left side vertical tail/fuselage juncture, psia

NOMENCLATURE (Continued)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
P_{EB2}		pressure measured on Orbiter fuselage surface on right side vertical tail/fuselage juncture, psia
P_{S1}		pressure measured on left side of Orbiter strut S_1 , psia
P_{S2}		pressure measured on right side of Orbiter strut S_1 , psia
q	$Q(PSF)$	freestream dynamic pressure, psf
RN/ET	RN/L	freestream unit Reynolds no., 10^6 per foot
\bar{V}		mean freestream velocity, ft/sec
S	$SREF$	wing area or reference area, ft^2
WL	Z	water line, in
X		longitudinal Orbiter separation distance, measured from nominal mated position, ft
X_C	XC	carrier longitudinal station, in
X_{MRP}	$XMRP$	longitudinal location of MRC, in
X_O	XO	Orbiter longitudinal station, in
Y		Orbiter lateral separation distance, measured from nominal mated position, ft
Y_C	YC	carrier lateral station, in
Y_{MRP}	$YMRP$	lateral location of MRC, in
Y_O	YO	Orbiter lateral station, in
Z		Orbiter vertical separation distance, measured from nominal mated position, ft
Z_C	ZC	carrier vertical station, in

NOMENCLATURE (Continued)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
Z_{MRP}	ZMRP	vertical location of MRC, in
Z_O	ZO	Orbiter vertical station, in
$1/(\Delta Z+10)$	$1/Z+10$	separation parameter, inverse of vertical separation distance plus 10 ft, per foot
α	ALPHA	angle of attack, deg.
α_C	ALPHAC	carrier fuselage angle of attack, $\alpha_W - 2^\circ$, deg.
α_O	ALPHAO	Orbiter angle of attack, deg.
α_W	ALPHAW	carrier wing angle of attack, $\alpha_C + 2^\circ$, deg.
α_{Wall}	ALPWAL	wind tunnel wall correction to carrier angle of attack, deg.
β	BETA	angle of sideslip, deg.
β_C	BETAC	carrier sideslip angle, deg.
β_O	BETAO	Orbiter sideslip angle, deg.
δ_a	AILRON	aileron deflection angle, deg.
δ_e	ELEVON	Orbiter elevon deflection angle, deg.
δ_{eI}	ELV-IB	inboard carrier elevator panel deflection angle, deg.
$\delta_{e\phi}$	ELV-OB	outboard carrier elevator panel deflection angle, deg.
δ_{ev}	ELEVTR	carrier elevator deflection angle, deg.
δ_r	RUDDER	carrier rudder deflection angle, deg.
δ_{rL}	RUD-L	carrier lower rudder panel deflection angle, deg.

NOMENCLATURE (Continued)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
δr_u	RUD-U	carrier upper rudder panel deflection angle, deg.
δ_S		spoiler deflection angle, deg.
ΔC_A	DCA	incremental axial force coefficient
ΔC_D	DCD	incremental drag coefficient
ΔC_{l_B}	DCBL	incremental body axis rolling moment coefficient
ΔC_{l_S}	DCSL	incremental stability axis rolling moment coefficient
ΔC_L	DCL	incremental lift coefficient
ΔC_m	DCLM	incremental pitching moment coefficient
ΔC_{n_B}	DCYN	incremental body axis yawing moment coefficient
ΔC_{n_S}	DCLN	incremental stability axis yawing moment coefficient
ΔC_N	DCN	incremental normal force coefficient
ΔC_Y	DCY	incremental side force coefficient
ΔX	DX	Orbiter longitudinal separation distance from nominal mated position, ft
ΔY	DY	Orbiter lateral separation distance from nominal mated position, ft
ΔZ	DZ	Orbiter vertical separation distance from nominal mated position, ft
$\Delta \alpha$	DALFA	incremental angle of attack between Orbiter and carrier FRL, $\alpha_o - \alpha_c$, deg.

NOMENCLATURE (Concluded)

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
$\Delta\beta$	DBETA	incremental angle of sideslip between Orbiter and carrier, $\beta_0 - \beta_c$, deg.
$\Delta\phi$	DPHI	incremental roll angle between Orbiter and carrier, deg.
ϕ	PHI	Orbiter roll angle, deg.
C_{LC}	CL-C	carrier lift coefficient with test mounting system corrections
C_{DC}	CD-C	carrier drag coefficient with test mounting system corrections
C_{mC}	CLM-C	carrier pitching moment coefficient with test mounting system corrections
C_{YC}	CY-C	carrier side force coefficient with test mounting system corrections
C_{nBC}	CYN-C	carrier body yaw moment coefficient with test mounting system corrections
C_{nSC}	CLN-C	carrier stability yaw moment coefficient with test mounting system corrections
C_{lSC}	CSL-C	carrier stability roll moment coefficient with test mounting system corrections
C_{lBC}	CBL-C	carrier body roll moment coefficient with test mounting system corrections
C_{AC}	CA-C	carrier axial force coefficient with test mounting system corrections
C_{NC}	CN-C	carrier normal force coefficient with test mounting system corrections

REMARKS

The Orbiter axial force, measured during this test, exhibits the following trend:

- 1) at low angles of attack, axial force decreases with increasing angle of attack, as would normally be expected,
- 2) at high angles of attack, axial force increases with increasing angle of attack, contrary to normal expectations.

Extensive investigations and analysis, conducted during the test, indicated that trend number (2) was not caused by model fouling or other test problems and was, indeed, representative of aerodynamic characteristics.

Vertical tail pressure instrumentation (P_{EB1} and P_{EB2}) was disconnected during runs 588 through 599.

Configuration D (as described in figure 2f) was not at $\phi = 90^\circ$, as planned, because of support system deflections (caused by the Orbiter model touching strut S3).

CONFIGURATIONS INVESTIGATED

The Orbiter model was an 0.030-scale representation of the Space Shuttle Orbiter VL70-000140A/B lines with modified OMS pods and elevons as shown in figure 2a. The basic Orbiter is a blended wing-body design with a double delta wing (75° and 45° leading edge sweeps). The Orbiter model was tested both with and without a tail cone fairing. The tail cone fairing covered the MPS nozzles, OMS nozzles, and base, as shown in Figure 3b. The Orbiter model was mounted in the tunnel using several blade strut configurations as follows:

- S_1 = Orbiter support blade strut, upper entry position,
- S_2 = Orbiter support blade strut, lower entry position,
- S_3 = Orbiter dummy support blade strut.

Figure 2f shows the strut arrangements. Orbiter elevon and aileron deflection angles were varied. The Orbiter was tested both isolated and in the presence of the carrier at various separation locations. The following Orbiter configurations were tested:

- $O_1 = B_{26} C_9 E_{43} F_8 M_{16} W_{116} TC_{5.1}$
- $O_2 = B_{26} C_9 E_{43} F_8 M_{16} N_{28} N_{24} W_{116} \text{ (with strut } S_1)$
- $O_3 = B_{26} C_9 E_{43} F_8 M_{16} R_5 V_8 W_{116} TC_{5.1}$
- $O_4 = B_{26} C_9 E_{43} F_8 M_{16} W_{116} TC_{5.1}$
- $O_5 = B_{26} C_9 E_{43} F_8 M_{16} N_{28} N_{24} R_5 V_8 W_{116}$
- $O_6 = B_{26} C_9 E_{43} F_8 M_{16} N_{28} N_{24} R_5 V_8 W_{116} \text{ MPS cover plate off}$

CONFIGURATIONS INVESTIGATED (Continued)

$O_7 = B_{26} C_9 E_{43} F_8 M_{16} N_{28} R_5 V_8 W_{116}$ strut, S_2 cover plate #1 off MPS base plate off

$O_8 = B_{26} C_9 E_{43} F_8 M_{16} N_{28} R_5 V_8 W_{116}$ strut, S_2 cover plate #2 off MPS base plate off

$O_9 = B_{26} C_9 E_{43} F_8 M_{16} N_{28} N_{24} W_{116}$ (with strut S_2)

where:

<u>Component</u>	<u>Description</u>
B_{26}	Orbiter fuselage per Rockwell lines VL70-000140A/B, model drawing SS-A01360
C_9	Orbiter canopy per Rockwell lines VL70-000140A/B, model drawing SS-A01360
E_{43}	Orbiter full-span, unswept hingeline, 6" gapped elevons per Rockwell lines VL70-000200, model drawing SS-A01360
F_8	Orbiter body flap per Rockwell lines VL70-000200, model drawing SS-A01360
M_{16}	Orbiter OMS/RCS pods per Rockwell lines VL70-000203A, VL70-008401, model drawing SS-A01360
N_{24}	Orbiter main propulsion system (MPS) nozzles - VL70-000140A, VL70-005030A, model drawing SS-A01360
N_{28}	Orbiter OMS nozzles - VL70-000140A model drawing SS-A01360
R_5	Orbiter rudder per Rockwell lines VL70-000146A, model drawing SS-A01360
$TC_{5.1}$	Orbiter tail cone fairing which covers the MPS nozzles and the OMS nozzles and base, built by the Boeing Company, also used in CA5
V_8	Orbiter centerline vertical tail per Rockwell lines VL70-000146A, model drawing SS-A01360
W_{116}	Orbiter double delta wing per Rockwell lines VL70-000200, model drawing SS-A01360

CONFIGURATIONS INVESTIGATED (Continued)

Effects of simulated attach hardware were investigated using the following model components attached to the carrier.

- AT₃₈ Forward attach structure between the Orbiter and carrier model used for i_o of 3 to 10 degrees for $\Delta Z = 0$ feet
- AT₃₉ Aft attach structure between the Orbiter and carrier model for $\Delta Z = 0$ feet

The carrier model was an 0.030-scale representation of the Boeing 737-100 aircraft with surface contours built to represent the 747 under loads it would experience with a 600,000 pound gross weight flying at Mach 0.86 at an altitude of 35,000 feet. The model also had a built in 0.64° leading edge up wing tip twist to compensate for model aerelastic effects, which are estimated to produce a 0.64° leading edge down twist. The carrier had 200 square foot tip fins on its horizontal tail. Spoilers were deflected to 45° and flaps were retracted during most of the test. Several runs were made with spoilers retracted. Elevator and rudder deflections were varied during the test. The carrier was tested both isolated and in the presense of the Orbiter at various separation conditions. Carrier configurations investigated were:

$$747/0 = B_{27.8} F_o H_{15.6} M_{26}^{25} N_{58}^{57} T_{19} V_{9.1} W_{44.1}$$

$$747/1 = B_{27.8} F_o H_{15.6} M_{26}^{25} N_{58}^{57} S_{1-12} T_{19} V_{9.1} W_{44.1}, \delta_s = 45^\circ$$

where:

<u>Component</u>	<u>Description</u>
B _{27.8}	fuselage
F _o	all flaps retracted

CONFIGURATIONS INVESTIGATED (Concluded)

$H_{15.6}$	horizontal tail (H_{15}) with 200 ft ² tip fins
M_{26}^{25}	inboard (M_{25}) and outboard (M_{26}) nacelle struts
N_{58}^{57}	inboard (N_{57}) and outboard (N_{58}) nacelles
S_{1-12}	12 spoiler panels located on wing upper surface, all deflected 45°
T_{19}	flap track fairing
$V_{9.1}$	vertical tail
$W_{44.1}$	wing

Orbiter base pressures were measured, for configurations without tail cone, at locations as shown by figure 2c. Pressures were measured on both sides of Orbiter support strut when S_1 was used and pressures were measured on the fuselage near the vertical tail when the vertical tail was installed as shown by figure 2d. Pressures were measured in the Orbiter and carrier balance cavity.

TEST FACILITY DESCRIPTION

The Boeing Transonic Wind Tunnel (BTWT) is a continuous flow, closed circuit, single return, atmospheric facility with the following characteristics:

<u>Test Section Flow Parameters</u>		<u>Test Section Dimensions</u>	
Freestream Condition	Range	Description	Value
Mach number	0 thru 1.15	Cross-section (minus corner fillets), ft.	8 x 10
Dynamic pressure, psia	0 thru 6.3	Length, ft.	14.5
Static pressure, psia	15 to 5.4	Area, ft. ²	88
Stagnation pressure	atmospheric		
Maximum unit Reynolds number, per foot	4×10^6		
Maximum total temperature, °F	160		

The test section can be operated with either solid or slotted walls. The slotted wall configuration consists of 16 slots which can vary wall porosity from 3.5% to 11%.

Test data acquisition, recording, computations, and display are done by an XDS-9300 computer and Astro data sub-system.

DATA REDUCTION

Force and moment data were reduced in both body and stability axes using standard Boeing data reduction procedures. The following data reduction constants were used:

<u>Symbol</u>	<u>Description</u>	<u>Carrier</u>		<u>Orbiter</u>	
		<u>Model Scale</u>	<u>Full Scale</u>	<u>Model Scale</u>	<u>Full Scale</u>
S	reference area, ft. ²	4.950	5500	2.421	2690.0
b	reference span, in	70.441	2348.04	28.100	936.68
\bar{c}	reference mac, in	9.833	327.78	14.244	474.81
MRC	moment reference center, in				
	XC or XO	40.197	1339.90	33.270	1109.0
	YC or YO	0.0	0.0	0.0	0.0
	ZC or ZO	5.723	190.80	11.250	375.0

No base or cavity corrections were applied to the data.

Wind tunnel data were interpolated versus the applicable separation parameters (α_0 , ΔZ , ΔX , α_w , ΔY , β_0 , β_c , and ϕ) as summarized by Table VII. These interpolated data were used to compute interference increments by subtracting isolated data from interference data as summarized by Table VIII. A special interpolation routine was used for datasets with simulated attach hardware as summarized by Tables IX and X. Interpolated carrier data were corrected for support strut tare and interference using corrections obtained during test CA5 as summarized by Table XI. Basic data, interpolated data, incremental data, and carrier data with tare and interference corrections, are presented in this report. Tables IV through VI describe data presentation formats.

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Reports and Internal Letters

Speed Letter, SAS/WT0/74-365, "Fabrication of a new 0.03-scale Orbiter Model," dated July 3, 1974

IL, SAS/WT0/74-173, Addendum #1, "Updated Model Design Requirements for Model 45-0", dated July 24, 1974

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IL, SAS/AERO/74-493, "Piggyback Separation Tests - Orbiter Support Configurations and Corrections," dated August 9, 1974

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IL, SAS/AERO/74-617, "Test Requirements for Separation Test CA20," dated August 20, 1974

NA-74-541, "Structural Analysis of the 0.03-scale SSV model 45-0", dated July 23, 1974

DMS-DR-2211, "Results of a 0.03-scale Aerodynamic Characteristics Investigation of a Boeing 747 Carrier (Model AX 1319 I-D) Mated with a Space Shuttle Orbiter (Model 45-0) conducted in the Boeing Transonic Wind Tunnel (CA5)", by 747 Aerodynamics, 747 Flight Controls, and Wind Tunnel Test Group, Boeing Aerospace Company

Drawings

Rockwell International - SSV Orbiter

SS-A01360 - Model Assy., 45-0, 0.03 Sc. SSV Orbiter (140A/B) Revision B, dated August 1, 1974

SS-A01361 - Model Instl. 45-0, 0.03 Sc. SSV Ferry Separation, Release 1, dated August 12, 1974

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65-69716 - Model Assy., TE 1007 I-1, dated August 23, 1973

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- 747-MD-461 - General Arrangement - 747 Space Shuttle Orbiter Carrier Aircraft (Piggyback Configuration), dated July 15, 1974
- 747-MD-576 - Structural Arrangement - Orbiter Aft Support, 747 MOD, dated August 1, 1974
- 1319-6, "Inbd Main Flap," dated 7-26-74
- 1319-15, "Wing Coves," dated 7-29-74
- 1319-24, "Outbd Fore-Flap," dated 8-5-74
- 1319-25, "Outbd Fore-Flap," dated 8-5-74
- 1319-33, "Inner Body - Orbiter (Bal #660)" dated 8-13-74
- 1319-34, "Spoiler, dated 8-14-74
- 1319-35, "Balance Holder - Orbiter (Bal #660)" dated 8-14-74
- 1319-36, "Rear Mtg. Parts - Orbiter," dated 8-28-74
- 1319-37, "Aft Support and Balance Adapter Assy. Orbiter," dated 8-28-74
- 1319-38, "Inbd Flap Assy 20° F8.1," dated 8-17-74
- 1319-39, "Inbd Flap Brkts 20° F8.1," dated 8-19-74
- 1319-40, "Setting Temp - L.E. Flaps," dated 8-17-74
- 1319-41, "Outbd Flap Brkts 20° F8.2," dated 8-20-74
- 1319-42, "Outbd Flap Assy 20° F8.2," dated 8-20-74
- 1319-43, "Fwd Orbiter Support Parts & Assy," dated 8-21-74
- 1319-44, "L. E. Kruger & Flap Instl.," dated 8-21-74
- 1319-45, "BTWT Orbiter Alone Mtg Parts & Assy," dated 8-22-74
- 1319-47, "Template-Stabilizer Tip Fin," dated 8-22-74

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1319-55, "Stabilizer Fins," dated 8-23-74

1319-57, "Stabilizer Fin Brkts," dated 8-24-74

1319-60, "Stabilizer Fin Instl," dated 8-26-74

1319-63, "Orbiter Modif, & Inner Body Instl," dated 8-29-74

1319-64, "Model Support Mat'l," dated 9-3-74

D6-25552, "Model Geometry Estimated Loads and Stress Analysis, Model AX13181-1," dated 9-11-74

TABLE I

[illegible]

TABLE II.

TEST: CA20		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: REV. 1/15/75					
DATA SET IDENTIFIER	CONFIGURATION	ORBITER										MACH NUMBERS					
						δ_0	δ_2	α_0	ϕ_0	ϕ_2	ΔX	ΔY	ΔZ	.3	.48	.5	.6
FGN001	O ₁ S ₂ S ₃					5	0	Δ	-5	0	—	—	—	576	577		
02						5	0		0	0				575			
03						5	0		0	0							572
04	Y					5	0		0	0							574
05	O ₂ S ₂ S ₃					5	0		-5	0					578		
06	Y					5	0		0	0					580		579
07	O ₁ S ₁					5	0		-5	0				603			604
08						0	0		0	0							614
09						5	-10		0	0							613
10						5	0		0	0				615			616
11						10	0	Y	0	0			Y				612
12						5	0	10	-5	0			Δ				605
13						5	0	14	-5	0			Y				606
14	Y					5	0	7.5	Δ	-90			—				617
15	O ₂ S ₁					5	0	Δ	-5	0							607
16						0	0		0	0							609
17						5	-10		0	0							610
Y 18	Y					5	0	Y	0	0	Y	Y	Y				608
		1	7	13	19	25	31	37	43	49	55	61	67	73	76		
SEE TABLE I FOR COEFFICIENT SCHEDULES																	
α OR β SCHEDULES		$\Delta \alpha_{FRL} = 0^\circ, 2^\circ, 4^\circ, 6^\circ, 8^\circ, 10^\circ$ $\alpha_c = \alpha_{FRL}$ COEFFICIENTS CARRIER $\alpha_w = 2^\circ$										$\Delta \Delta Z = 0^*, 3, 7.5, 15, 30, 45, 60$ FE. IDVAR (1) IDVAR (2) IDV					
		$\Delta \phi_c = -10^\circ, -7^\circ, -5^\circ, -3^\circ, -2^\circ, -1^\circ, 0^\circ, 1^\circ, 2^\circ, 3^\circ, 5^\circ, 10^\circ$ ANGLES										$\Delta \phi_0 = 2.5^\circ, 0^\circ, -2.5^\circ, -5^\circ, -7.5^\circ, -10^\circ, -15^\circ$					

NASA-MSFC-MAF

TABLE II. (Continued)

TEST: CA20		DATA SET/RUN NUMBER COLLATION SUMMARY											DATE: REV. 1/15/75				
DATA SET IDENTIFIER	CONFIGURATION	ORBITER											MACH NUMBERS				
		δ_e	δ_a	δ_r	α_0	θ_0	ϕ_0	ΔX	ΔY	ΔZ	.3	.48	.5	.6			
RGNO19	O ₂ S ₁				10	0	—	Δ	0	0	—	—	—				611
20	O ₃ S ₂				5	0	0		-5	0				597			595
21					5	0	0		0	0				592		593	594
22					5	0	0		0	0							591
23	Y				5	0	15		0	0							589
24	O ₅ S ₂				5	0	0		-5	0							598
25					5	0	0		0	0							581
26	Y				5	0	15		0	0							588
27	O ₆ S ₂				5	0	0		0	0							582
28	O ₇ S ₂				5	0	0		0	0							583
29	O ₈ S ₂				5	0	0		0	0							584
30					5	0	0		0	0							585
31					5	0	0		0	0							586
32	Y				5	0	0		0	0							587
Y 33	O ₉ S ₂				5	0	—	Y	-5	0	Y	Y	Y				599

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICENTS

α OR β _____

SCHEDULES _____

IDVAR (1) _____

IDVAR (2) _____

IDVAR (3) _____

NASA-USFC-MAF

TABLE II. (Continued)

[illegible]

TABLE II. (Continued)

[illegible]

TABLE II. (Continued)

TEST: CA20		DATA SET/RUN NUMBER COLLATION SUMMARY													DATE: 1/15/75			
DATA SET IDENTIFIER	CONFIGURATION	CARRIER				ORBITER								$\alpha \beta$				
		α_c	β_c	δ_{ev}	δ_r	δ_e	δ_a	MACH		θ_0	θ_s	ΔX	ΔY	ΔZ	6	10	14	
RGNO49	747/1 O, S,	0	0	0/3	0	5	0	0.6		0	0	0	0	4	631	628	630	
50		0	0	0/3	0	5	0	0.6		0	0	10	0		636	637	638	
51		0	0	0/3	0	5	0	0.6		0	0	20	0		641	640	639	
52		4	0	0/3	0	5	0	0.6		0	0	0	0		632	646	647	
53		4	0	0/3	0	5	0	0.6		0	0	10	0		635	674	693	
54		4	0	0/3	0	5	0	0.6		0	0	20	0		642	677	676	
55		8	0	0/3	0	5	0	0.6		0	0	0	0		633	645	644	
56		8	0	0/3	0	5	0	0.6		0	0	10	0		634	691	692	
57		8	0	0/3	0	5	0	0.6		0	0	20	0		643	674	675	
58		4	0	0/3	0	5	0	0.6		0	0	0	10		775	781		
59		4	0	0/3	0	5	0	0.6		0	0	10	10		735	738		
60		8	0	0/3	0	5	0	0.6		0	0	0	10		780	787		
61		8	0	0/3	0	5	0	0.6		0	0	10	10		736	737		
62		4	-5	0/3	0	5	0	0.6		0	0	0	0		649	648		
63		4	-5	0/3	0	5	0	0.6		0	0	10	0		687	688		
64		4	-5	0/3	0	5	0	0.6		0	0	20	0		670	671		
65		8	-5	0/3	0	5	0	0.6		0	0	0	0		650	651		
66		8	-5	0/3	0	5	0	0.6		0	0	10	0	V	690	689		
		1	7	13	19	25	31	37	43	49	55	61	67	73	79	85	91	
COEFFICIENTS																		
IDVAR (1) IDVAR (2) IDVAR (3)																		
α OR β																		
SCHEDULES																		

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TEST RUN NUMBERS

TABLE II. (Continued)

TEST: CA20		DATA SET/RUN NUMBER COLLATION SUMMARY													DATE: REV. 1/15/75		
DATA SET IDENTIFIER	CONFIGURATION	CARRIER				ORBITER								α_o			
		α_c	β_c	δ_{ev}	δ_T	δ_a	δ_a	MAKH		θ_o	ϕ_o	ΔX	ΔY	ΔZ	6	10	14
RGNO67	747/1 0,5,1	8	-5	0/3	0	5	0	0.6		0	0	20	0	A		673	672
68		4	-5	0/3	0	5	0	0.6		0	0	0	10			776	782
69		4	-5	0/3	0	5	0	0.6		0	0	10	10			739	742
70		8	-5	0/3	0	5	0	0.6		0	0	0	10			779	786
71		8	-5	0/3	0	5	0	0.6		0	0	10	10			740	741
72		4	5	0/3	0	5	0	0.6		0	0	0	10			777	783
73		4	5	0/3	0	5	0	0.6		0	0	10	10			743	746
74		8	5	0/3	0	5	0	0.6		0	0	0	10			778	785
75		8	5	0/3	0	5	0	0.6		0	0	10	10			744	745
76		4	-5	0/3	0	5	0	0.6		0	7.5	0	0			700	699
77		4	-5	0/3	0	5	0	0.6		0	7.5	10	0			679	680
78		8	-5	0/3	0	5	0	0.6		0	7.5	0	0			701	698
79		8	-5	0/3	0	5	0	0.6		0	7.5	10	0			682	681
80		4	-5	0/3	0	5	0	0.6		0	7.5	0	10			791	792
81		4	-5	0/3	0	5	0	0.6		0	7.5	10	10			752	755
82		8	-5	0/3	0	5	0	0.6		0	7.5	0	10			798	797
93		8	-5	0/3	0	5	0	0.6		0	7.5	10	10			753	754
Y 84	Y	4	0	0/3	0	5	0	0.6		0	7.5	0	0	Y		705	704
		1	7	13	19	25	31	37	43	49	55	61	67	73	79	85	91
COEFFICIENTS																	
IDVAR (1) IDVAR (2) IDVAR (3)																	
α OR β																	
SCHEDULES																	

TABLE II. (Continued)

TEST: CA20		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: REV. 1/15/75				
DATA SET IDENTIFIER	CONFIGURATION	CARRIER						ORBITER						C.O.		
		α_c	β_c	δ_{ev}	δ_T	δ_e	δ_a	MACH	δ_o	ϕ_o	ΔX	ΔY	ΔZ	G	10	14
RGNOB5	747/1 OIS,	4	0	0/3	0	5	0	0.6	0	7.5	10	0	A		686	685
86		8	0	0/3	0	5	0	0.6	0	7.5	0	0		702	703	
87		8	0	0/3	0	5	0	0.6	0	7.5	10	0		683	684	
88		4	0	0/3	0	5	0	0.6	0	7.5	0	10		790	793	
89		4	0	0/3	0	5	0	0.6	0	7.5	10	10		748	751	
90		3	0	0/3	0	5	0	0.6	0	7.5	0	10		799	796	
91		8	0	0/3	0	5	0	0.6	0	7.5	10	10		749	750	
92		4	5	0/3	0	5	0	0.6	0	7.5	0	10		789	794	
93		4	5	0/3	0	5	0	0.6	0	7.5	10	10		756	759	
94		8	5	0/3	0	5	0	0.6	0	7.5	0	10		800	795	
95		8	5	0/3	0	5	0	0.6	0	7.5	10	10		757	758	
96		4	-5	0/3	0	5	0	0.6	-5	7.5	0	10		804	805	
97		8	-5	0/3	0	5	0	0.6	-5	7.5	0	10		811	810	
98		4	0	0/3	0	5	0	0.6	-5	7.5	0	10		803	806	
99		8	0	0/3	0	5	0	0.6	-5	7.5	0	10		812	809	
100		4	5	0/3	0	5	0	0.6	-5	7.5	0	10		802	807	
101		8	5	0/3	0	5	0	0.6	-5	7.5	0	10		813	808	
Y 102	Y	4	-5	0/3	0	5	0	0.6	-5	7.5	0	10	Y		915	

1 7 13 19 25 31 37 43 49 55 61 67 75 76

COEFFICIENTS
IDVAR (1) IC, AR (2) ICV

α OR β

SCHEDULES

TABLE II. (Continued)

TEST: CA20		DATA SET/RUN NUMBER COLLATION SUMMARY												DATE: REV 1/15/75			
DATA SET IDENTIFIER	CONFIGURATION	CARRIER						ORBITER						DO			
		δ_c	δ_e	δ_{ev}	δ_r	δ_θ	δ_a	MACH	ϕ_0	ϕ_0	ΔX	ΔY	ΔZ	6	10	14	
RGN103	747/1 O, S ₁	4	0	0/3	0	5	0	0.6	-5	7.5	0	10	4			814	
104		4	-5	0/3	0	5	0	0.6	-5	0	10	0			830	835	
105		8	-5	0/3	0	5	0	0.6	-5	0	10	0			841	836	
106		4	-5	0/3	0	5	0	0.6	-5	0	0	10			844		
107		4	-5	0/3	0	5	0	0.6	-5	0	10	10			819	820	
108		8	-5	0/3	0	5	0	0.6	-5	0	10	10			828	823	
109		4	0	0/3	0	5	0	0.6	-5	0	10	0			831	834	
110		8	0	0/3	0	5	0	0.6	-5	0	10	0			840	837	
111		4	0	0/3	0	5	0	0.6	-5	0	0	10			843		
112		4	0	0/3	0	5	0	0.6	-5	0	10	10			819	821	
113		8	0	0/3	0	5	0	0.6	-5	0	0	10				846	
114		8	0	0/3	0	5	0	0.6	-5	0	10	10			827	824	
115		4	5	0/3	0	5	0	0.6	-5	0	10	0			832	833	
116		8	5	0/3	0	5	0	0.6	-5	0	10	0			839	838	
117		4	5	0/3	0	5	0	0.6	-5	0	0	10			845		
118		4	5	0/3	0	5	0	0.6	-5	0	10	10			817	822	
119		8	5	0/3	0	5	0	0.6	-5	0	10	10			826	825	
Y 120	Y	4	-5	0	0	5	0	0.6	-5	0	0	10	Y		765	768	
<div> <div>1 7 13 19 25 31 37 43 49 55 61 67 75 76</div> <div>COEFFICIENTS</div> <div>IDVAR (11) IDVAR (2) IDV</div> </div>																	
<div> <div>α OR β</div> <div>SCHEDULES</div> </div>																	

TEST RUN NUMBERS

33

TABLE II. (Continued)

TEST: CA20		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: REV. 1/15/75					
DATA SET IDENTIFIER	CONFIGURATION	CARRIER				ORBITER						α ₀					
		α _c	β _c	δ _{ev}	δ _r	δ _e	δ _a	MACH	β _o	φ _o	ΔX	ΔY	ΔZ	6	10	14	
RCN121	747/1 O ₁ S ₁	8	-5	0	0	5	0	0.6	-5	0	0	10	4		766	767	
122		4	0	0	0	5	0	0.6	-5	0	0	10			761	764	
123		8	0	0	0	5	0	0.6	-5	0	0	10			762	763	
124		4	5	0	0	5	0	0.6	-5	0	0	10			769	772	
125	Y	8	5	0	0	5	0	0.6	-5	0	0	10			770	771	
126	747/1 O ₂ S ₁	4	-5	0/3	0	5	0	0.6	0	0	0	0			656		
127		4	-5	0/3	0	5	0	0.6	0	0	10	0			657		
128		4	-5	0/3	0	5	0	0.6	0	0	20	0			669		
129		4	0	0/3	0	5	0	0.6	0	0	0	0			652	653	
130		4	0	0/3	0	5	0	0.6	0	0	10	0			661	659	
131		4	0	0/3	0	5	0	0.6	0	0	20	0			665	666	
132		8	0	0/3	0	5	0	0.6	0	0	0	0			655	654	
133		8	0	0/3	0	5	0	0.6	0	0	10	0			658	660	
134		8	0	0/3	0	5	0	0.6	0	0	20	0			668	667	
135		4	-5	0/3	0	5	0	0.6	0	0	0	10			728		
136		4	-5	0/3	0	5	0	0.6	0	0	10	10			732		
137		4	0	0/3	0	5	0	0.6	0	0	0	10			727		
Y 138	Y	4	0	0/3	0	5	0	0.6	0	0	10	10	Y		731		
		1	7	13	19	25	31	37	43	49	55	61	67	73	79		
COEFFICIENTS																	
IDVAR (1) IC, AR (2) ICV																	
α OR β																	
SCHEDULES																	

TABLE II. (Continued)

[illegible]

TABLE II. - DATA SET/RUN NUMBER COLLATION SUMMARY
(Continued)

Symbol Definition

Orbiter

0_1 = Vertical tail off (V_8) Tail cone on ($TC_{5.1}$)	0_5 = Vertical tail on (V_8) Tail cone off
0_2 = Vertical tail off (V_8) Tail cone off with strut S_1	0_6 = MPS base plate off Vertical tail on (V_8)
0_3 = Vertical tail on (V_8) Tail cone on ($TC_{5.1}$)	0_7 = MPS base plate off, S_2 cover plate #1 off, Vertical tail on
0_4 = Tail cone on ($TC_{5.1}$) Vertical Tail simulating dummy strut	0_8 = MPS base plate off, S_2 cover plate #2 off, Vertical tail on
	0_9 = MPS base plate on, Vertical tail off with strut S_2

Orbiter Support Strut

S_1 = Orbiter support blade strut, upper entry position
S_2 = Orbiter support blade strut, lower entry position
S_3 = Orbiter dummy support blade strut

Carrier

747/0 = Carrier with spoilers and flaps retracted
747/1 = Carrier with spoilers deflected 45° and flaps retracted

α , β , and ΔZ Schedules

$\Delta \alpha_c = 0^\circ, 2^\circ, 4^\circ, 6^\circ, 8^\circ, 10^\circ$
$\Delta \beta_c = -10^\circ, -7^\circ, -5^\circ, -3^\circ, -2^\circ, -1^\circ, 0^\circ, +1^\circ, +2^\circ, +3^\circ, +5^\circ, +10^\circ$
$\Delta \alpha_o = 6^\circ, 8^\circ, 10^\circ, 12^\circ, 14^\circ, 16^\circ, 18^\circ$

TABLE II. (Concluded)

$$\triangle \Delta Z = 0^*, 3', 7.5', 15', 30', 45', 60'$$

$$\triangle \beta_0 = 2.5^\circ, 0^\circ, -2.5^\circ, -5^\circ, -7.5^\circ, -10^\circ, -15^\circ$$

* minimum attainable

Table III. - MODEL DIMENSIONAL DATA
A. Carrier Model

MODEL COMPONENT: BODY - B_{27.8}

GENERAL DESCRIPTION: Body 74-7 Project with A.P.V.

Model Scale: 0.03

Drawing Number: 65-69716

Dimensions:

Length, in

Full Scale

Model Scale

2702

81.06

Max. Width, in

7.66

Area

Wetted, ft²

12.71

Table IIIA - Continued.

MODEL COMPONENT: F₀

GENERAL DESCRIPTION Clean Wing

Flaps Up

Table IIIA - Continued

MODEL COMPONENT: Horizontal Tail H15.6

GENERAL DESCRIPTION: Horizontal Tail with Vertical Fins on each

Tip at Body B. L. 12.82

Model Scale 0.03

Drawing Number 1319-55 1/2 - 60

<u>Dimension:</u>	<u>Full Scale</u>	<u>Model Scale</u>
-------------------	-------------------	--------------------

EXPOSED DATA (one side)

Area-ft ²	<u>200</u>
----------------------	------------

Table IIIA - Continued.

MODEL COMPONENT: M₂₅

GENERAL DESCRIPTION: Inboard 747, JT9D nacelle strut

Model Scale: 0.03

<u>Dimensions</u>	<u>Full Scale</u>	<u>Model Scale</u>
Wing B.L. of nacelle C_L , in.	<u>470.0</u>	<u>14.100</u>
Cont angle deg. inboard	<u>2</u>	<u>2</u>

TABLE IIIA - Continued

MODEL COMPONENT: M₂₆

GENERAL DESCRIPTION: Outboard 747, JT9D

Strut

Model Scale: 0.03

Drawing Number: 937-590

<u>Dimensions</u>	<u>Full Scale</u>	<u>Model Scale</u>
W L of C _L , in	<u> </u>	<u>25.020</u>
Cant angle, deg inboard	<u>2</u>	<u>2</u>

Table IIIA - Continued.

MODEL COMPONENT: N₅₇
GENERAL DESCRIPTION Inboard Fan Cowl and Primary 747 Nacelle,
Flow Through Type
Model Scale: 0.03
Drawing Number: S.O. 1007-96-97

Table IIIA - Continued

MODEL COMPONENT: N₅₈

GENERAL DESCRIPTION: Outboard Fan Cowl and Primary 747 Nacelle,
Flow Through Type

Model Scale: 0.03

Drawing Number S.O. 1.007-96,-97

Table IIIA - Continued.

MODEL COMPONENT: Spoilers S_{1-12}

GENERAL DESCRIPTION: Multi-panel flight spoilers. Four outboard and two inboard spoiler per side. Subscript denotes spoiler panel S_1 is the most outboard L.H. panel and S_{12} is most outboard R.H. panel.

747 Model Scale: 0.03 Model: 1065

Drawing No.: 65-71450, S.O. 1065-51, -59, -81, -173

Dimensions: (One panel)	<u>Full Scale</u> <u>Ft.</u>	<u>Model Scale</u> <u>IN.</u>
Outboard S_{1-4} and S_{9-12} (Ft^2)	<u>21.48</u>	<u>0.019 ft^2</u>
Span (equivalent)	<u>6.25</u>	<u>2.25</u>
Chord	<u>3.44</u>	<u>1.238</u>
Inboard S_{5-6} and S_{7-8} (Ft^2)	<u>35.31</u>	
Span (equivalent)	<u>7.50</u>	<u>2.70</u>
Chord	<u>4.71</u>	<u>1.696</u>

Table IIIA - Continued

MODEL COMPONENT: T₁₉

GENERAL DESCRIPTION: Flap Track Fairings,

4 on each side

Model Scale: 0.03

Drawing Number: S.O. 1007-403

<u>DIMENSIONS</u>	<u>Full Scale</u>	<u>Model Scale</u>
WBL of Track no. 1, in.	<u>235.3</u>	<u>7.06</u>
2, in.	<u>353.0</u>	<u>10.59</u>
3, in.	<u>652.0</u>	<u>19.56</u>
4, in.	<u>743.6</u>	<u>22.31</u>
Distance from wing Trailing edge to: Track Trailing edge, in.	<u>50.0</u>	<u>1.5</u>

Table IIIA - Continued.

MODEL COMPONENT: Vertical ^V9.1

GENERAL DESCRIPTION: Swept Vertical Tail

Model Scale: 0.03

Drawing Number: 65-6.9716; 1007-26,-610; 937-319

<u>Dimensions:</u>	<u>Full Scale</u>	<u>Model Scale</u>
TOTAL DATA		
Area (Theo) -- Ft^2	<u>630.0</u>	<u>.567</u>
Span (theo) - In.	<u>386.5</u>	<u>11.595</u>
Sweep-Back Angles, Degrees		
Leading Edge	<u>50.12</u>	<u>50.12</u>
Chords:		
Root (Theo) WP-in.	<u>461.67</u>	<u>13.85</u>
Tip (Theo) WP-in.	<u>157.0</u>	<u>4.71</u>
Cus. Sta. of .25 MAC	<u>2529.6</u>	<u>75.888</u>

Table IIIA - Continued.

MODEL COMPONENT: WING-^W44.1

GENERAL DESCRIPTION: Swept 747 Wing

Model Scale: 0.03

Test No.

DWG. No. 65-89585

Dimensions:

Full Scale

Model Scale

Total Data

Area (Theo.) Ft²
Planform

5500

4.95

Span (Theo In.

2348.04

70.441

Aspect Ratio

6.96

6.96

Incidence Angle, degrees

7

7

Chords:

MAC

327.78

9.833

Fus. Sta. of .25 MAC

1339.90

40.197

W.P. of .25 MAC

190.80

5.723

TABLE IIIA - Continued.

MODEL COMPONENT: ATTACH STRUCTURE - AT₃₈

GENERAL DESCRIPTION: Orbiter to carrier forward attach
struts.

MODEL SCALE: 0.030

DRAWING NO.: BOEING 1319-43

DIMENSIONS:	SCALE	
	FULL	MODEL
AT ₃₈	15.6	0.465
AT _{38.1}	91.67	2.75
AT _{38.2}	75.00	2.25
AT _{38.2A}	75.0	2.25
AT _{38.3}	ROD REMOVED	ROD REMOVED

TABLE IIIA - Concluded.

MODEL COMPONENT: ATTACH STRUCTURE - AT₃₉

GENERAL DESCRIPTION: Orbiter to carrier aft attachment, pitch adjustable from 0 to 10 deg.

MODEL SCALE: 0.030

DRAWING NO.: Boeing 50 1319-37.

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Pivot location:		
In., X _C	400.0	12.0
In., Z _C	160.7	4.821
Equivalent Span (At 0 deg i _{orb}):		
Centerline orbiter	521.0	15.63

TABLE III MODEL DIMENSIONAL DATA
B. Orbiter

MODEL COMPONENT : BODY - B₂₆

GENERAL DESCRIPTION : Configuration 140A/B orbiter fuselage.

NOTE: B₂₆ is identical to B₂₄ except underside of fuselage has been
refaired to accept W₁₁₆.

MODEL SCALE: 0.030

MODEL DWG: SS-A00147, Release 12

DRAWING NUMBER: VL70-000143B, -000200, -000205, -006089, -000145
VL70-000140A, -000140B

DIMENSIONS :

	FULL SCALE	MODEL SCALE
Length (OML: Fwd Sta X _O = 235), In.	1293.3	38.799
Length (IML: Fwd Sta X _O = 238), In.	1290.3	38.709
Max Width (At X _O = 1528.3), In.	264.0	7.920
Max Depth (At X _O = 1464), In.	250.0	7.500
Fineness Ratio	0.264	0.264
Area - Ft ²		
Max. Cross-Sectional	340.88	0.307
Planform		
Wetted		
Base		

TABLE IIIB - Continued.

MODEL COMPONENT : CANOPY - C₉

GENERAL DESCRIPTION : Configuration 3A. Canopy used with fuselage B₂₆.

MODEL SCALE: 0.030 MODEL DWG: SS-A00147, Release 12

DRAWING NUMBER : VL70-000143A

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length ($X_O = 434.643$ to 578), In.	<u>143.357</u>	<u>4.301</u>
Max Width (At $X_O = 513.127$), In.	<u>152.412</u>	<u>4.572</u>
Max Depth (At $X_O = 485.0$), In.	<u>25.00</u>	<u>0.750</u>
Fineness Ratio	<u></u>	<u></u>
Area	<u></u>	<u></u>
Max. Cross-Sectional	<u></u>	<u></u>
Planform	<u></u>	<u></u>
Wetted	<u></u>	<u></u>
Base	<u></u>	<u></u>

TABLE IIIB - Continued.

MODEL COMPONENT: SLOTTED ELEVON (6 INCH GAP) - E₄₃

GENERAL DESCRIPTION: Configuration 140A/B orbiter elevon.

NOTE: E₄₃ is a slotted version of E₂₆. Data are for one side.

MODEL SCALE: 0.030

DRAWING NUMBER: VL70-000200, -006089, -006092

DIMENSIONS:

	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>210.00</u>	<u>0.189</u>
Span (equivalent), In.	<u>349.2</u>	<u>10.476</u>
Inb'd equivalent chord, In.	<u>118.004</u>	<u>3.540</u>
Outb'd equivalent chord, In.	<u>55.192</u>	<u>1.656</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.2096</u>	<u>0.2096</u>
At Outb'd equiv. chord	<u>0.4004</u>	<u>0.4004</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Tailing Edge	<u>-10.056</u>	<u>-10.056</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
(Product of Area & \bar{c})		
Area Moment (Normal to hingeline), Ft ³	<u>1587.25</u>	<u>0.043</u>
Mean Aerodynamic Chord, In.	<u>90.7</u>	<u>2.721</u>

TABLE IIIB - Continued.

MODEL COMPONENT : BODY FLAP - F₈

GENERAL DESCRIPTION : Configuration 140A/B orbiter body flap

NOTE: Hingeline located at X_o = 1528.3, Z_o = 284.3

MODEL SCALE: 0.030 MODEL DWG: SS-A00147, Release 12

DRAWING NUMBER: VL70-000140A, -000145

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (X _o =1520 - 1613) In.	<u>93.00</u>	<u>2.79</u>
Max Width , IN.	<u>262.00</u>	<u>7.86</u>
Max Depth (X _o = 1520), In.	<u>23.00</u>	<u>0.69</u>
Fineness Ratio	<u></u>	<u></u>
Area - Ft ²	<u></u>	<u></u>
Max. Cross-Sectional	<u></u>	<u></u>
Planform	<u>150.525</u>	<u>0.1355</u>
Wetted	<u></u>	<u></u>
Base	<u>41.847</u>	<u>0.0377</u>

TABLE IIIB - Continued.

MODEL COMPONENT : OMS POD - M₁₆

GENERAL DESCRIPTION : Configuration 140C

Orbiter OMS pod - Short pod

MODEL SCALE: 0.030

DRAWING NUMBER : VL70-008401, -008410

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (OMS Fwd Sta. $X_O=1310.5$)	<u>258.50</u>	<u>7.755</u>
Max Width (At $X_O = 1511$), In.	<u>136.8</u>	<u>4.104</u>
Max Depth (At $X_O = 1511$), In.	<u>74.70</u>	<u>2.241</u>
Fineness Ratio	<u>2.484</u>	<u>2.484</u>
Area - Ft ²	<u></u>	<u></u>
Max. Cross-Sectional	<u>58.864</u>	<u>0.053</u>
Planform	<u></u>	<u></u>
Wetted	<u></u>	<u></u>
Base	<u></u>	<u></u>

TABLE IIIB - Continued.

MODEL COMPONENT: MP3 NOZZLES - N₂₄

GENERAL DESCRIPTION: Configuration 140A/B orbiter MPS nozzles

MODEL SCALE: 0.030

MODEL DWG: SS-A00147, Release 12

DRAWING NUMBER: VL70-005030A, -000140A

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
MACH NO.		
Length - In.		
Gimbal Point to Exit Plane	<u>157.00</u>	<u>4.71</u>
Throat to Exit Plane	<u>99.2</u>	<u>2.976</u>
Diameter - In.		
Exit	<u>91.00</u>	<u>2.73</u>
Throat	<u> </u>	<u> </u>
Inlet	<u> </u>	<u> </u>
Area - ft ²		
Exit	<u>45.166</u>	<u>0.0407</u>
Throat	<u> </u>	<u> </u>
Gimbal Point (Station) - In.		
Upper Nozzle		
X	<u>1445.00</u>	<u>43.35</u>
Y	<u>0.0</u>	<u>0.0</u>
Z	<u>443.00</u>	<u>13.29</u>
Lower Nozzles		
X	<u>1468.170</u>	<u>44.045</u>
Y	<u>±53.00</u>	<u>± 1.59</u>
Z	<u>342.640</u>	<u>10.279</u>
Null Position - Deg.		
Upper Nozzle		
Pitch	<u>16</u>	<u>16</u>
Yaw	<u>0</u>	<u>0</u>
Lower Nozzle		
Pitch	<u>10</u>	<u>10</u>
Yaw	<u>3.5</u>	<u>3.5</u>

TABLE IIIB - Continued.

MODEL COMPONENT: OMS NOZZLES - N₂₈

GENERAL DESCRIPTION: Configuration 140A/B orbiter OMS Nozzles

MODEL SCALE: 0.030

DRAWING NUMBER: VL70-000140A (Location), SS-A00106, Release 5 (Contour)

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
MACH NO.		
Length - In.		
Gimbal Point to Exit Plane		
Throat to Exit Plane		
Diameter - In.		
Exit		
Throat		
Inlet		
Area - ft ²		
Exit		
Throat		
Gimbal Point (Station) - In.		
Left Upper Nozzle		
X _o	<u>1518.00</u>	<u>45.54</u>
Y _o	<u>-88.0</u>	<u>-2.64</u>
Z _o	<u>492.0</u>	<u>14.76</u>
Right Lower Nozzles		
X _o	<u>1518.0</u>	<u>45.54</u>
Y _o	<u>88.0</u>	<u>2.64</u>
Z _o	<u>492.0</u>	<u>14.76</u>
Null Position - Deg.		
Left Upper Nozzle		
Pitch	<u>±8</u>	<u>±8</u>
Yaw	<u>13° 17' Outb'd, 2° 30' Inb'd</u>	<u>Same</u>
Right Lower Nozzle		
Pitch	<u>±8</u>	<u>±8</u>
Yaw	<u>13° 17' Outb'd, 2° 17' Inb'd</u>	

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TABLE IIIB - Continued.

MODEL COMPONENT: RUDDER - R₅GENERAL DESCRIPTION: Configuration 140C orbiter rudder (identical to configuration 140A/B rudder)MODEL SCALE: 0.030DRAWING NUMBER: VL70-000146B, -000095

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>100.15</u>	<u>0.090</u>
Span (equivalent), In.	<u>201.00</u>	<u>6.03</u>
Inb'd equivalent chord, In.	<u>91.585</u>	<u>2.748</u>
Outb'd equivalent chord, In.	<u>50.833</u>	<u>1.525</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge		
Tailing Edge	<u>26.25</u>	<u>26.25</u>
Hingeline (Product of area and \bar{c})	<u>34.83</u>	<u>34.83</u>
Area Moment (Normal to hingeline), Ft ³	<u>610.92</u>	<u>0.0165</u>
Mean Aerodynamic Chord, Inches	<u>73.2</u>	<u>2.196</u>

TABLE IIIB - Continued.

MODEL COMPONENT : ORBITER TAILCONE - TC_{5.1}

GENERAL DESCRIPTION : Fairing mounted on orbiter fuselage base for ferry missions.

MODEL SCALE: 0.030

DRAWING NUMBER : Boeing Dwg No.: 1319-71

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length	<u>445.83</u>	<u>13.375</u>
Max Width	<u>303.33</u>	<u>9.10</u>
Max Depth Height	<u>265.00</u>	<u>7.95</u>
Fineness Ratio	<u></u>	<u></u>
Area - Ft ²	<u></u>	<u></u>
Projected frontal area	<u>324.105</u>	<u>0.2917</u>
Max. Cross-Sectional	<u></u>	<u></u>
Planform	<u></u>	<u></u>
Wetted	<u></u>	<u></u>
Base	<u></u>	<u></u>

TABLE IIIB - Continued.

MODEL COMPONENT: VERTICAL - V₈GENERAL DESCRIPTION: Configuration 140A/B orbiter vertical tail.MODEL SCALE: 0.030

MODEL DWG: SS-A00148, Release 6

DRAWING NUMBER: VL70-000146A

DIMENSIONS:

FULL SCALEMODEL SCALE

TOTAL DATA

Area (Theo) - Ft ²		
Planform	<u>413.253</u>	<u>0.372</u>
Span (Theo) - In.	<u>315.720</u>	<u>9.472</u>
Aspect Ratio	<u>1.675</u>	<u>1.675</u>
Rate of Taper	<u>0.507</u>	<u>0.507</u>
Taper Ratio	<u>0.404</u>	<u>0.404</u>
Sweep-Back Angles, Degrees.		
Leading Edge	<u>45.000</u>	<u>45.000</u>
Trailing Edge	<u>26.25</u>	<u>26.25</u>
0.25 Element Line	<u>41.13</u>	<u>41.13</u>
Chords:		
Root (Theo) WP	<u>268.50</u>	<u>8.055</u>
Tip (Theo) WP	<u>108.47</u>	<u>3.254</u>
MAC	<u>199.81</u>	<u>5.994</u>
Fus. Sta. of .25 MAC	<u>1463.35</u>	<u>43.901</u>
W.P. of .25 MAC	<u>635.52</u>	<u>19.066</u>
B.L. of .25 MAC	<u>0.00</u>	<u>0.00</u>
Airfoil Section		
Leading Wedge Angle - Deg.	<u>10.00</u>	<u>10.00</u>
Trailing Wedge Angle - Deg.	<u>14.92</u>	<u>14.92</u>
Leading Edge Radius	<u>2.00</u>	<u>0.060</u>
Void Area	<u>13.17</u>	<u>0.119</u>
Blanketed Area	<u>0.00</u>	<u>0.00</u>

TABLE IIIB - Concluded.

MODEL COMPONENT: WING-W₁₁₆GENERAL DESCRIPTION: Configuration 4NOTE: Identical to W₁₁₄ except airfoil thickness. Dihedral angle is along trailing edge of wing. Geometric twist = 0.MODEL SCALE: 0.030

TEST NO.

DWG. NO. VL70-000140A, -000200DIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.) Ft²

Planform

Span (Theo) In.

Aspect Ratio

Rate of Taper

Taper Ratio

Dihedral Angle, degrees

Incidence Angle, degrees

Aerodynamic Twist, degrees

Sweep Back Angles, degrees

Leading Edge

Trailing Edge

0.25 Element Line

Chords:

Root (Theo) B.P.O.O.

Tip, (Theo) B.P.

MAC

Fus. Sta. of .25 MAC

W.P. of .25 MAC

B.L. of .25 MAC

EXPOSED DATAArea (Theo) Ft²

Span, (Theo) In. BP108

Aspect Ratio

Taper Ratio

Chords

Root BP108

Tip 1.00 $\frac{b}{2}$

MAC

Fus. Sta. of .25 MAC

W.P. of .25 MAC

B.L. of .25 MAC

Airfoil Section (Rockwell Mod NASA)
XXXX-64Root $\frac{b}{2}$ =Tip $\frac{b}{2}$ =

Data for (1) of (2) Sides

Leading Edge Cuff

Planform Area Ft²

Leading Edge Intersects Fus M. L. @ Sta

Leading Edge Intersects Wing @ Sta

Table IV.
CA20 DATASET DESCRIPTION
(Raw Data)

DATASET TYPE	DESCRIPTION
RGNXXX	Longitudinal coefficient schedule for 747 carrier balance data which contain "standard" wind tunnel corrections.
AGNXXX	Lateral coefficient schedule for 747 carrier balance data which contain "standard" wind tunnel corrections.
BGNXXX	Longitudinal coefficient schedule for orbiter balance data which contain "standard" wind tunnel corrections.
CGNXXX	Lateral coefficient schedule for orbiter balance data which contain "standard" wind tunnel corrections.
DGNXXX	Pressure coefficient data as follows: Q(PSF) - dynamic pressure, psf PB1, PB2, PB3 - orbiter base pressure coefficients PCAV - orbiter cavity pressure coefficient PSC - carrier cavity pressure coefficient LHLS, RHLS - left and right hand pressure coefficients in proximity to orb. vert. tail for blade/sting support system. LHVERT, RHVERT - identical to LHLS and RHLS but for base sting support system.

Table V.
CA20 COEFFICIENT SCHEDULE
(Raw Data)

Dataset Type	Dataset•Sequence	1st ID	2nd ID	Coefficients									
				1	2	3	4	5	6	7	8	9	10
RGNXXX	034-036	MACH	ALPHAW	BETA	Q(PSF)	CL	CD	CLM	CY	CLN	CSL		
	037	MACH	ALPHAO	ALPHAW	BETA	DY	DZ	CL	CD	CLM	CY	CLN	CSL
	038 & 039	MACH	BETA	ALPHAW	ALPHAO	DY	DZ	CL	CD	CLM	CY	CLN	CSL
	040-149	ALPHAO	DZ	MACH	DX	DY	BETAO	PHI	ALPHAW	BETA	CL	CD	CLM
AGNXXX	040-149	ALPHAO	DZ	MACH	DX	DY	BETAO	PHI	ALPHAW	BETA	CY	CLN	CSL
BGNXXX	001-011 & 015-033 & 037	MACH	ALPHAO	BETAO	PHI	Q(PSF)	CL	CD	CLM	CY	CLN	CSL	
	012 & 013	MACH	DZ	ALPHAO	BETAO	PHI	Q(PSF)	CL	CD	CLM	CY	CLN	CSL
	014	MACH	BETAO	ALPHAO	PHI	Q(PSF)	CL	CD	CLM	CY	CLN	CSL	
	038 & 039	MACH	BETA	ALPHAW	ALPHAO	DY	DZ	CL	CD	CLM	CY	CLN	CSL
	040-149	ALPHAO	DZ	MACH	DX	DY	BETAO	PHI	ALPHAW	BETA	CL	CD	CLM
CGNXXX	040-149	ALPHAO	DZ	MACH	DX	DY	BETAO	PHI	ALPHAW	BETA	CY	CLN	CSL
DGNXXX	001-011 & 015-019 & 037	MACH	ALPHAO	Q(PSF)	PB1	PB2	PB4	LHLS	RHLS	PCAV			
	012 & 013	MACH	DZ	Q(PSF)	PB1	PB2	PB4	LHLS	RHLS	PCAV			
	014	MACH	BETAO	Q(PSF)	PB1	PB2	PB4	LHLS	PHLS	PCAV			
	020-033	MACH	ALPHAO	Q(PSF)	PB1	PB2	PB4	LHVERT	RHVERT	PCAV			
	034-036	MACH	ALPHAW	PSC									
	038 & 039	MACH	BETA	Q(PSF)	PB1	PB2	PB4	LHLS	RHLS	PCAV			
	040-149	ALPHAO	DZ	Q(PSF)	PB1	PB2	PB4	LHLS	PHLS	PCAV			

Note: ID--Independent variable

Table VI
CA20 DATASET DESCRIPTION
(INTERPOLATED/INCREMENTED DATASETS)

DATASET TYPE	DESCRIPTION
MGNXXX	Interpolated data for 747 carrier balance data in carrier reference dimensions.
NGNXXX	Interpolated data for orbiter balance data in orbiter reference dimensions.
UGNXXX	Incremental data - 747 carrier data in presence of orbiter (mated) minus 747 carrier alone data in 747 carrier reference dimensions.
VGNXXX	Incremental data - Orbiter data in presence of 747 carrier (mated) minus orbiter alone data in orbiter reference dimensions.

NOTE: Datasets M, N, U, and V contain the full ΔZ array of 0 3 7.5 15 30 40 and 60 ft. Therefore, the datasets reflect extrapolations for some individual test arrays of ΔZ . For subsequent data plotting, the full ΔZ arrays were truncated to the actual tested arrays.

Table VII. CA20 INTERPOLATED DATASET SUMMARY

(M AND N DATASETS)	
DATASET(S)	INTERPOLATED VARIABLES (1) (2)
NGN001 → 011	MACH, ALPHAO
NGN012 → 013	MACH, DZ
NGN014	MACH, BETAO
NGN015 → 033	MACH, ALPHAO
MGN034 → 036	MACH, ALPHAW
MGN037 NGN037	MACH, ALPHAO
MGN038 NGN038 → 039	MACH, BETAC
MGN040 NGN040 → 048	ALPHAO, DZ (SEE NOTE 3)
MGN049 NGN049 → 119 MGN126 NGN126 → 140	ALPHAO, DZ, DX, ALPHAW, DY, BETAO, BETAC, PHI
MGN141 NGN141 → 149	ALPHAO, DZ
MGN120 NGN120 → 125	ALPHAO, DZ, BETAC, ALPHAW

NOTES:

(1) Interpolation procedure:

Number of Values Available for Interpolation	Interpolation Procedure
1	Substitute actual test value with a nominal test value (Note 3 below)
2	Straight line
3	Parabolic spline fit
4 → ∞	Cubic spline fit

(2)

BETA = BETAC

(3)

Interpolation was versus DZ and ALPHAO; however, since each of these datasets (40 → 48) has only one ALPHAO there was therefore no ALPHAO interpolation. The recorded test ALPHAO was replaced with a nominal test ALPHAO (i.e., 8, 12, or 16) so that the only interpolation was versus DZ.

Table VII. Concluded.

(4)

Interpolation on DX was not performed on all datasets due to large data fluxuations from the nominal condition.

Table VIII. CA20 INCREMENTAL DATASET SUMMARY

(INTERFERENCE) - (ISOLATED)

(U AND V DATASETS)

BASE DATASET	VEHICLE	BETAC, deg.	ALPHAW, deg.	BETA0, deg.	ELEVON, deg.	AILRON, deg.
MGN034	CARRIER (1)	-5	0	NA	NA	NA
	↓	↓	4	↓	↓	↓
			8			
MGN035		0	0			
	↓	↓	4			
			8			
MGN036		5	0			
	↓	↓	4	↓	↓	↓
			8			
NGN007	ORBITER-0 ₁ S ₁ (2)	NA	NA	-5	5	0
NGN010	↓	↓	↓	0	5	↓
NGN008					0	
NGN011					10	↓
NGN009					5	-10
NGN018	ORBITER-0 ₂ S ₁ (2)				5	0

NOTES:

- (1) ALPHAW Sweep (0°, 4°, 8°)
 (2) ALPHAO Sweep (6°, 8°, 10°, 12°, 14°, 16°, 18°)
 (3) Procedure - (a) Interpolate base datasets to various nominal α and β combinations.
 (b) Subtract appropriate interpolated base dataset from interpolated separation (mated) data, except for datasets 45 thru 48 which were utilized to provide the increment due to attach hardware as follows:

Resulting Dataset Number	First Dataset Number	Second Dataset Number
UGN045	MGN045	MGN049 @ ALPHAO = 8
VGN045	NGN045	NGN049 @ ALPHAO = 8
UGN046	MGN046	MGN052 @ ALPHAO = 12
VGN046	NGN046	NGN052 @ ALPHAO = 12
UGN047	MGN047	MGN055 @ ALPHAO = 16
VGN047	NGN047	NGN055 @ ALPHAO = 16
UGN048	MGN048	MGN046
VGN048	NGN048	NGN046

INCREMENT = (First Dataset) - (Second Dataset)

Datasets 45 thru 48 interpolated per note (3) on "Interpolated Dataset Summary".

Datasets 49, 52, and 55 interpolated versus ALPHAO, DZ, DX, ALPHAW, DY, BETA0, BETAC, PHI.

Table IX. SPECIAL INTERPOLATION FOR CONFIGURATIONS WITH ATTACH HARDWARE

RESULTANT DATASET SGNO — 1		CONFIGURATION	INPUT DATASETS			
CARRIER	ORBITER		$\beta_0 = 0^\circ, \beta_c = 0^\circ$			
			α_0	8°	12°	16°
			α_w	2°	6°	10°
A	B	747/0 0 ₁ S ₁ AT ₃₈ AT ₃₉		40	41	42
E	F	747/1 0 ₁ S ₁ AT ₃₈ AT ₃₉		45	46	47
I	J	747/1 0 ₁ S ₁		49		
K	L	747/1 0 ₁ S ₁			52	
M	N	747/1 0 ₁ S ₁				55
			$\alpha_0 = 12^\circ, \alpha_w = 5.83^\circ$			
			β_0	-5°	0°	
			β_c	-5°	0°	
C	D	747/0 0 ₁ S ₁ AT ₃₈ AT ₃₉		43	41	
G	H	747/1 0 ₁ S ₁ AT ₃₈ AT ₃₉		48	46	

NOTES:

- (1) Orbiter data were interpolated versus α_0 and ΔZ
- (2) Carrier data were interpolated versus α_w and ΔZ
- (3) The interpolation assumes a constant incidence angle between Orbiter and Carrier even though they were mounted on separate support systems (see Configuration A, in Figure 2F).
- (4) Resultant datasets SGNO — 1 have both lateral and longitudinal coefficient data.

Table X.

SPECIAL INTERPOLATED INCREMENTS FOR CONFIGURATIONS WITH ATTACH HARDWARE

RESULTANT DATASET		INPUT DATASETS			
		$\beta_0 = 0^\circ$		$\beta_c = 0^\circ$	
		α_0	8°	12°	16°
		α_w	2°	6°	10°
CARRIER	ORBITER				
WGNR45	XGNB45		45- 49		
WGNR46	XGNB46			46-52	
WGNR47	XGNB47				47-55
		$\alpha_0 = 12^\circ, \alpha_w = 5.83^\circ$			
WGNR48	XGNB48		48-46		
WGNR43	XGNB43		43-41		
WGNRDB	XGNBDB		(48, 46) - (43, 41)		
		$\beta_0 = 0^\circ, \beta_c = 0^\circ$			
WGNRCA	XGNBCA		(45, 46, 47) - (40, 41, 42)		

NOTE: Resultant datasets have incremental lateral and longitudinal coefficient data.

Table XI. CARRIER SUPPORT STRUT TARE AND INTERFERENCE CORRECTION PROCEDURE

α , deg.	β , deg.	CA5 Run with Image Strut	CA5 Run without Image Strut
$\triangleleft 1A$	0	15	99
2	$\triangleleft 2$	20	104
6	$\triangleleft 2$	23	108
8	$\triangleleft 2$	27	112

$$\alpha_w = \triangleleft 1A = 3^\circ \rightarrow 16^\circ, 1^\circ \text{ increments}$$

$$\beta = \triangleleft 2 = -12^\circ, -10^\circ, -8^\circ, -6^\circ, -4^\circ, -3^\circ, -2^\circ, \\ -1^\circ, 0^\circ, 1^\circ, 2^\circ, 3^\circ, 4^\circ, 6^\circ, 8^\circ, 10^\circ, 12^\circ$$

$$\text{Correction} = \left(\begin{array}{c} \text{Run with} \\ \text{Image Strut} \end{array} \right) - \left(\begin{array}{c} \text{Run without} \\ \text{Image Strut} \end{array} \right)$$

"Correction" datasets are 6GMDA4, 6GMDB4 and 6GMDC4, which were interpolated for $\alpha_w = 2^\circ$ to 12° and $\beta = -5^\circ, 0^\circ, +5^\circ$, respectively.

$$\text{Corrected} = \left(\begin{array}{c} \text{CA20 Data} \end{array} \right) - \left(\begin{array}{c} \text{Correction} \end{array} \right)$$

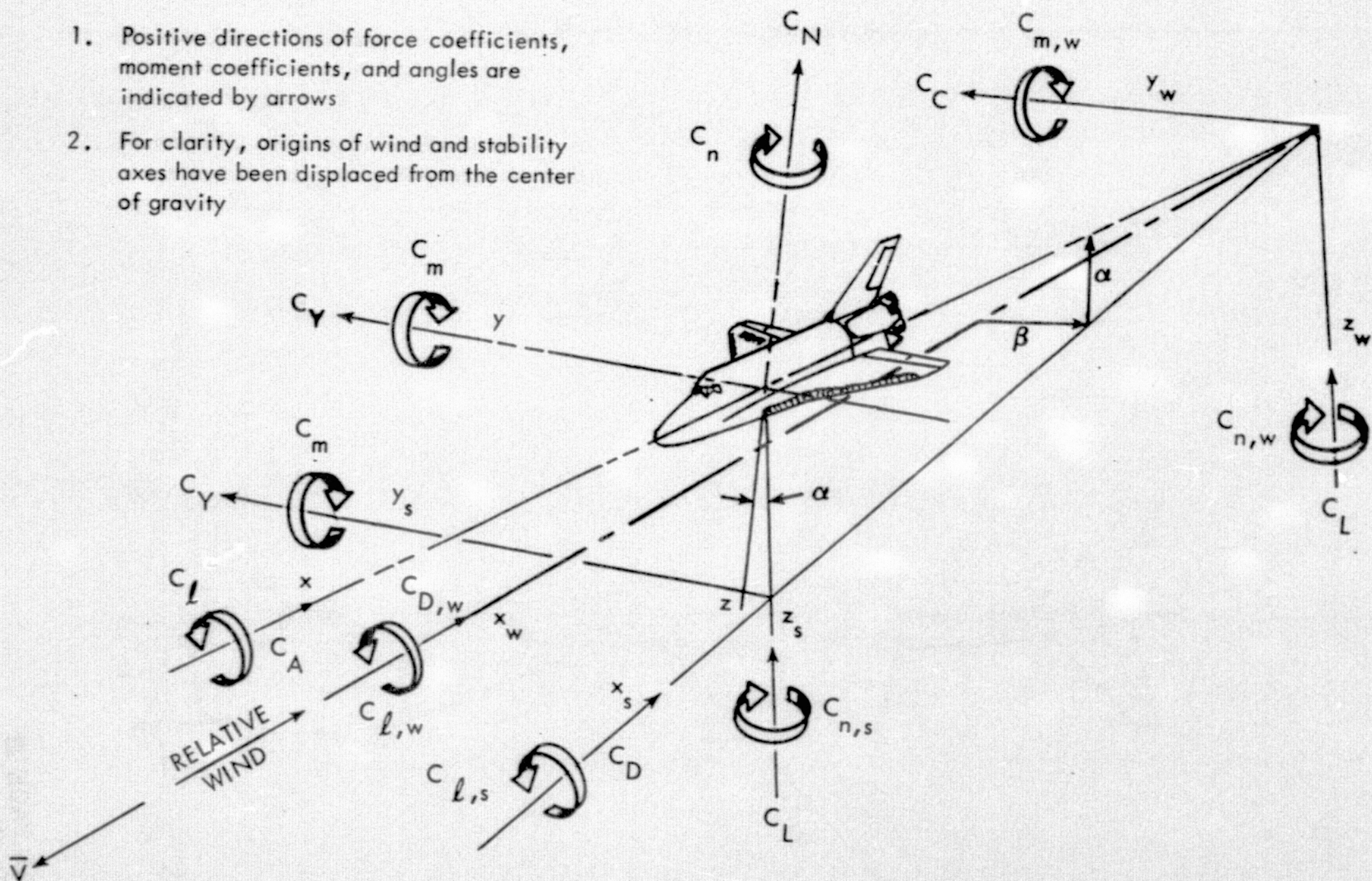
"Corrected" datasets are 5GN034-149. For the DZ and α_0 sweeps (2nd independent variable), the "correction" is a constant value for all coefficients. For the α_w and β sweeps (2nd independent variable), the "correction" is a function of α_w and β , respectively.

Note:

"Correction: and "corrected" data are shown in the Appendix.

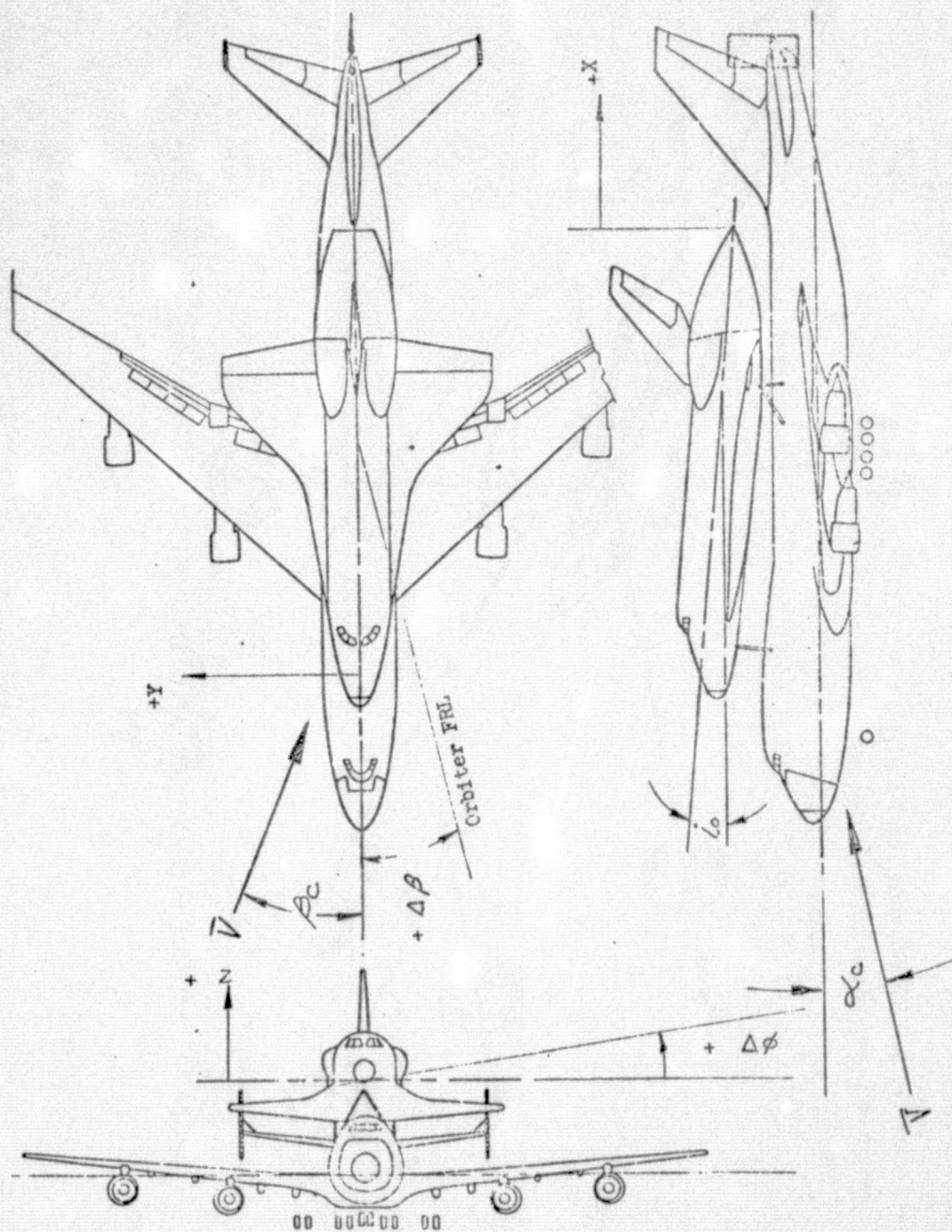
Notes:

1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrows
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity



a. General

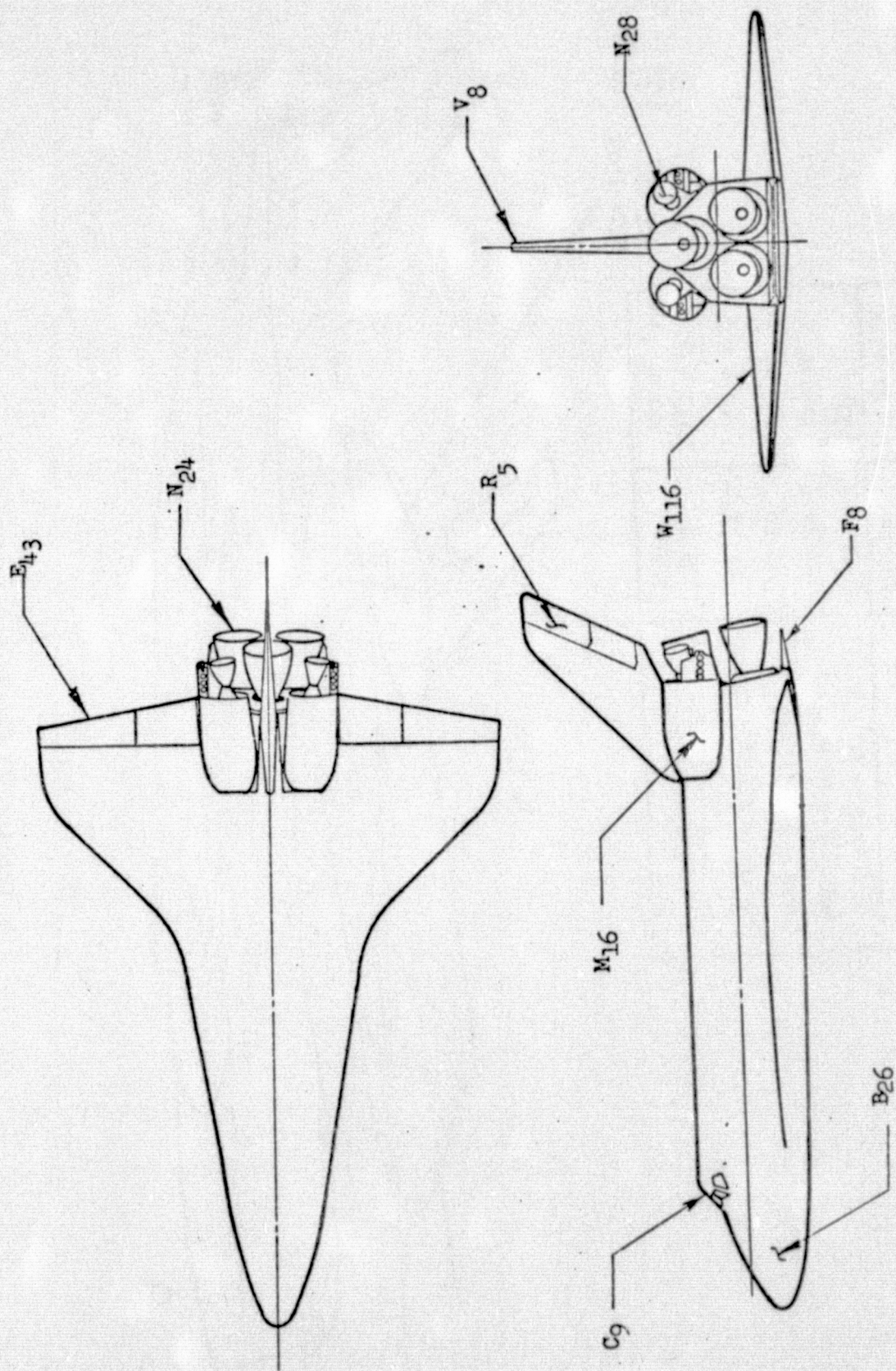
Figure 1. - Axis systems.



b. Orbiter/747 Axis System Definition

Figure 1. - Concluded.

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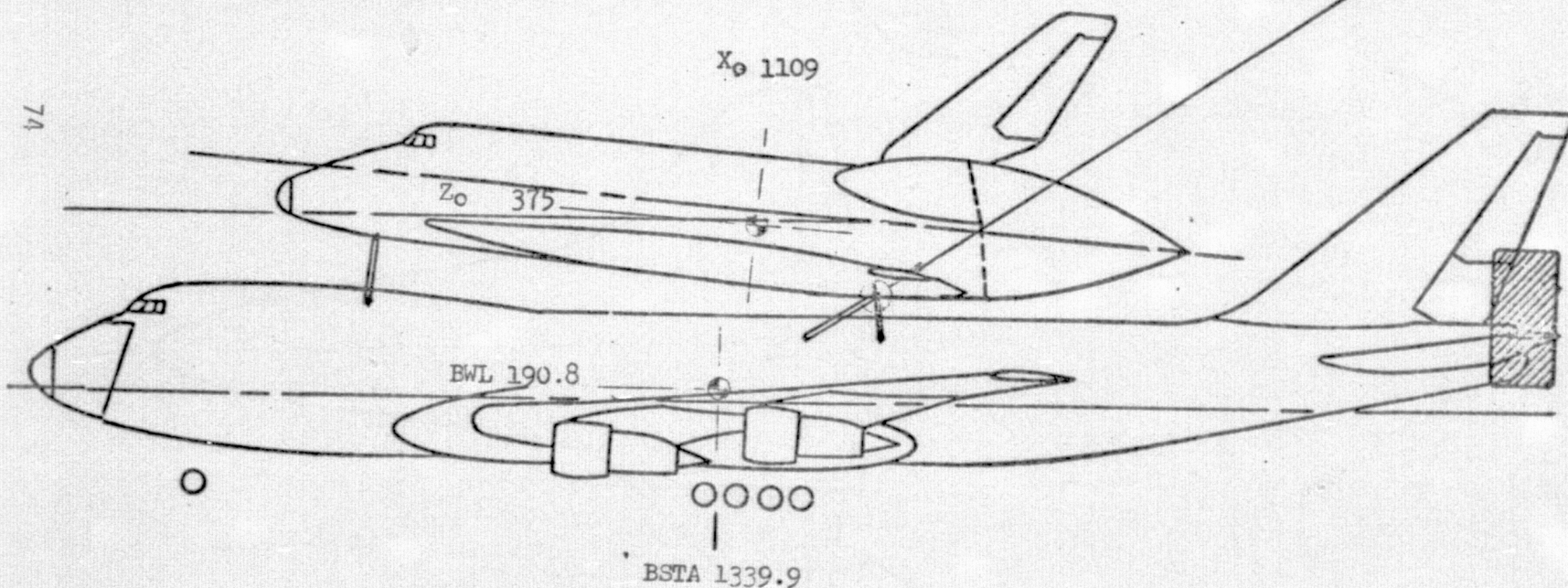
a. SSV Orbiter Configuration (VC70-000002)

Figure 2. - Model sketches

REFERENCE DIMENSIONS (FS)

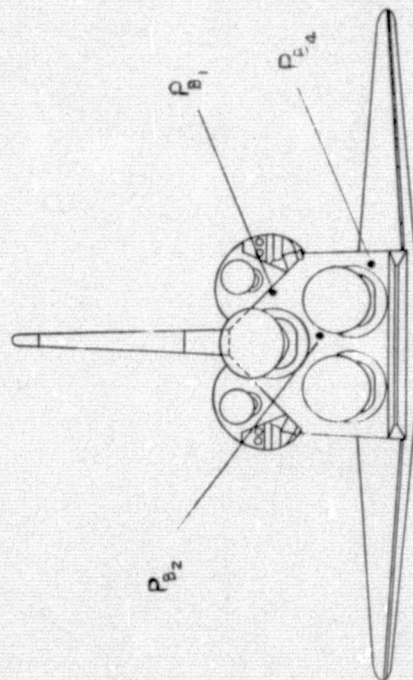
	ORBITER	747 CARRIER
WING AREA $\sim \text{Ft}^2$	2690	5500
MAC (\bar{c}) \sim INCHES	474.81	327.78
SPAN (b) \sim INCHES	936.68	2348.04
MOMENT REFERENCE CENTER	67.5% LB	25.0 % \bar{c}
F.S. \sim INCHES	1109.0	1339.9
W.P. \sim INCHES	375.0	190.8

BWL 400 (X_o 96.51)
 BSTA 1607 (Z_o 267.5)
 (X_o 1317)



b. Orbiter/747 Flight Test Configurations

Figure 2. - Continued.

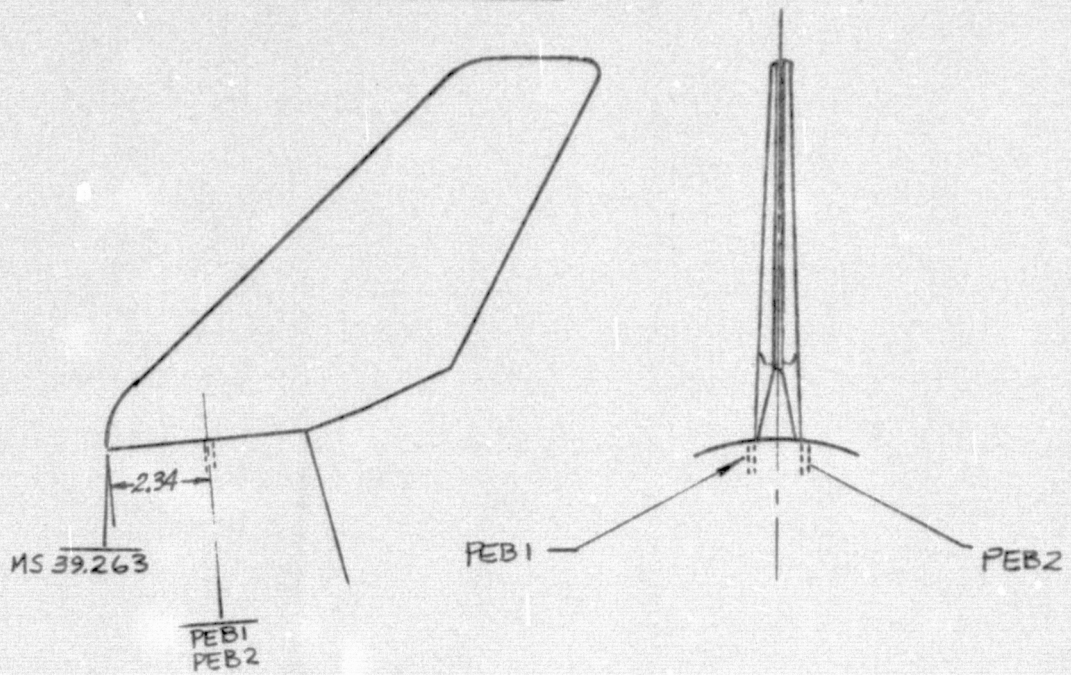


c. Base Pressure Locations

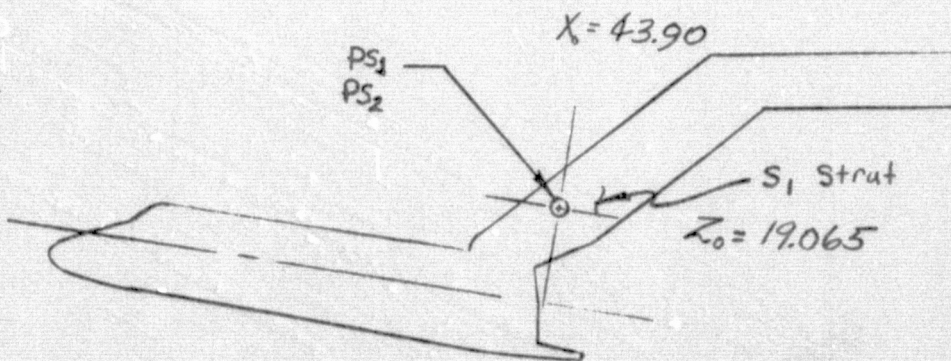
Figure 2. - Continued.

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CONFIGURATION B



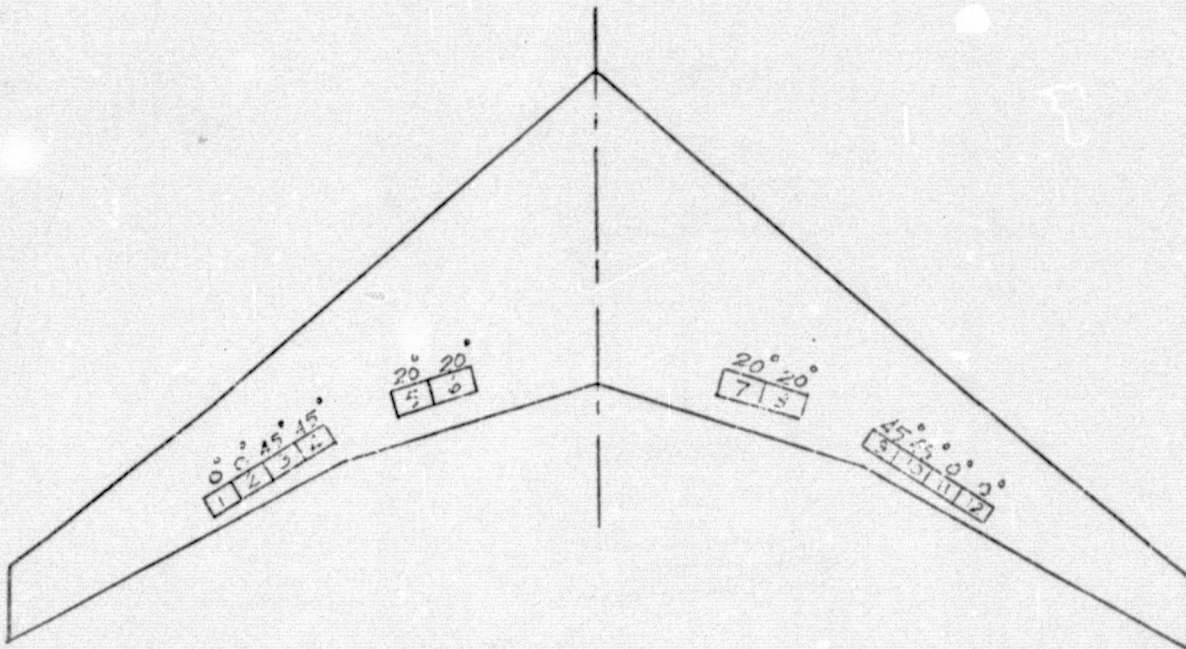
CONFIGURATION A



PRESSURE INSTRUMENTATION

d. Blade Strut and Vertical Tail Pressure Locations

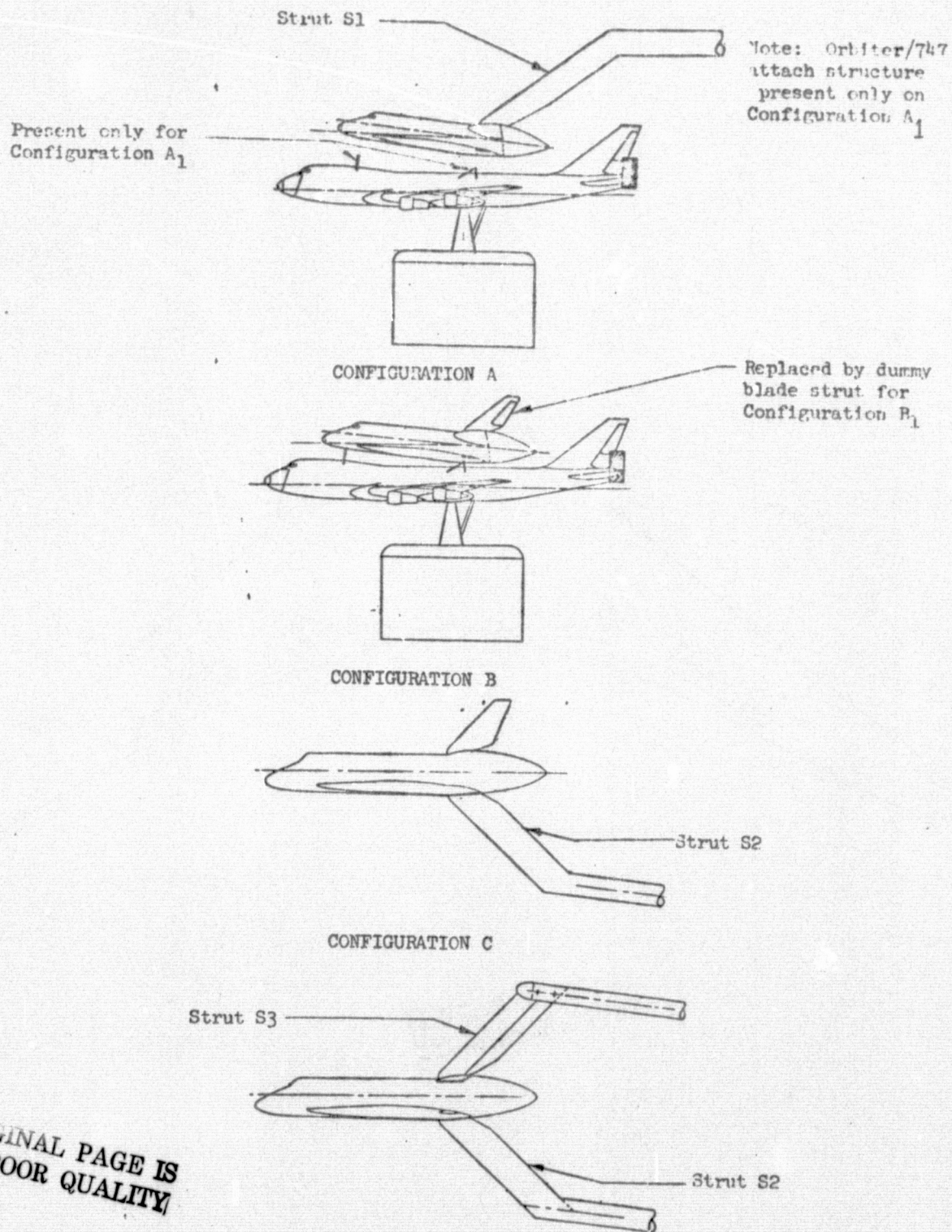
Figure 2. - Continued.



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e. Standard In-Flight Speed-Brake

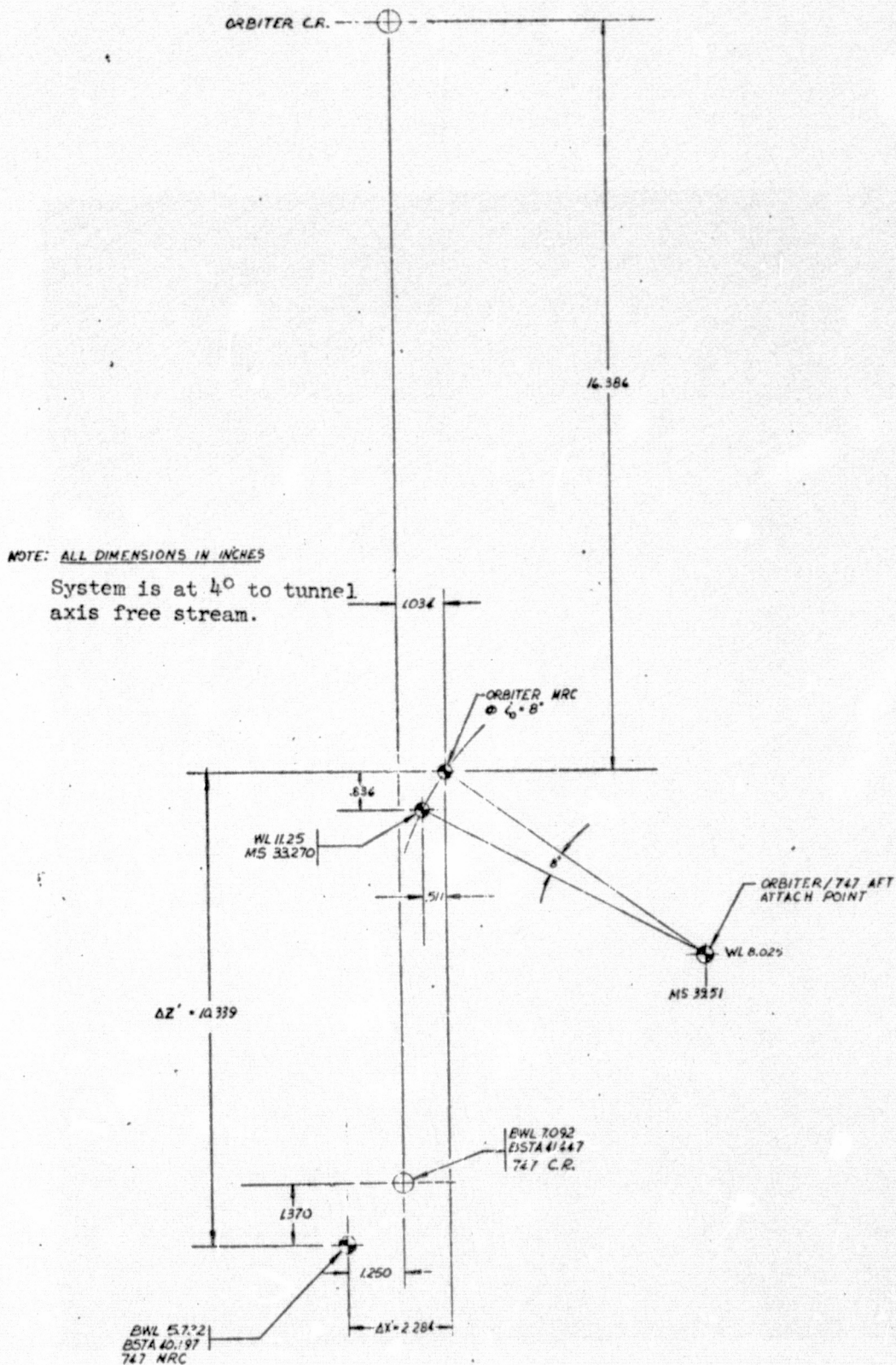
Figure 2. - Continued.



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f. Test Support Configurations

Figure 2. - Continued.



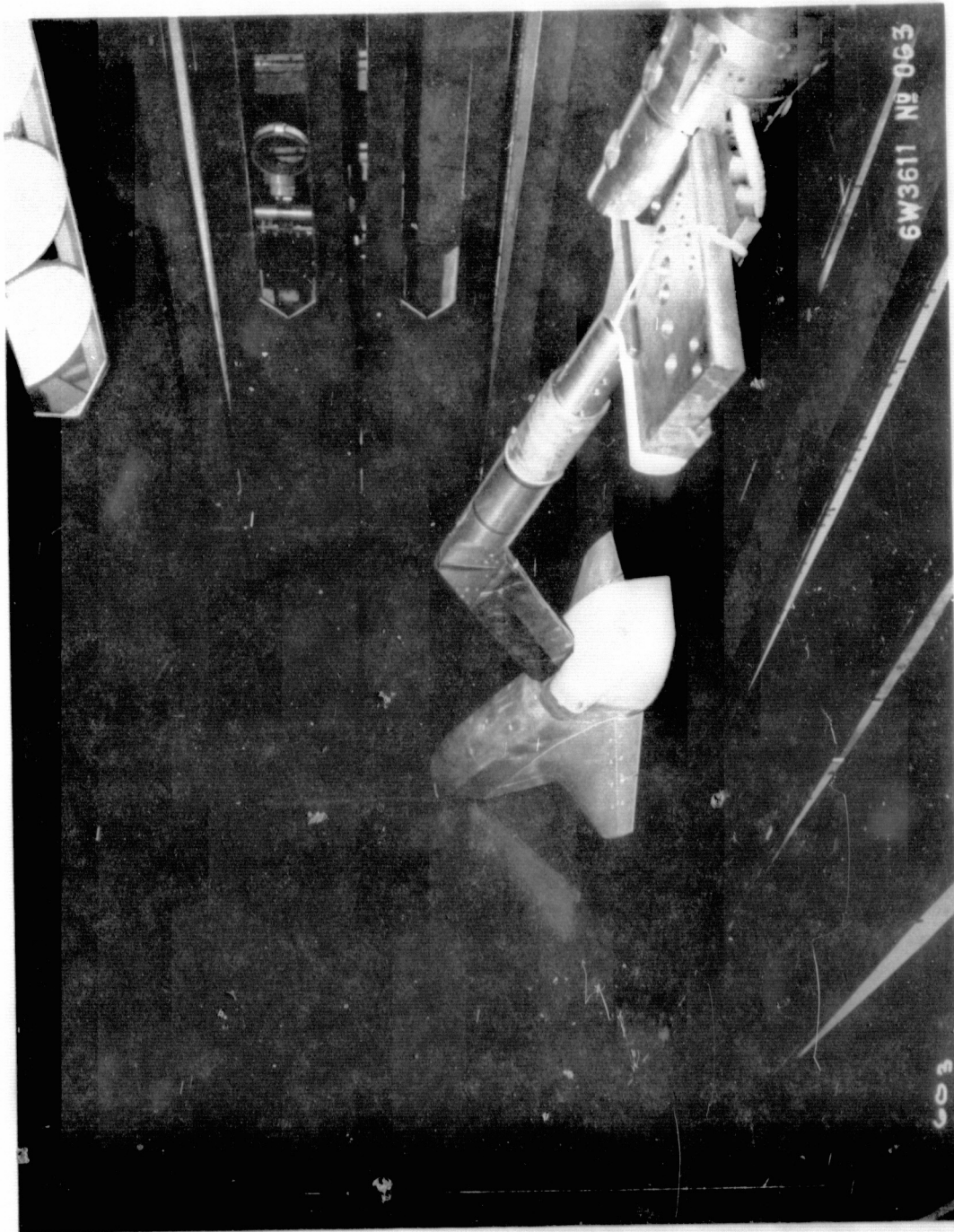
g. Orbiter/747 C.G. and C.R. Orientation

Figure 2. - Concluded.



a. Orbiter Alone with Dummy Blade in Proximity for Sting Tare Effect Study

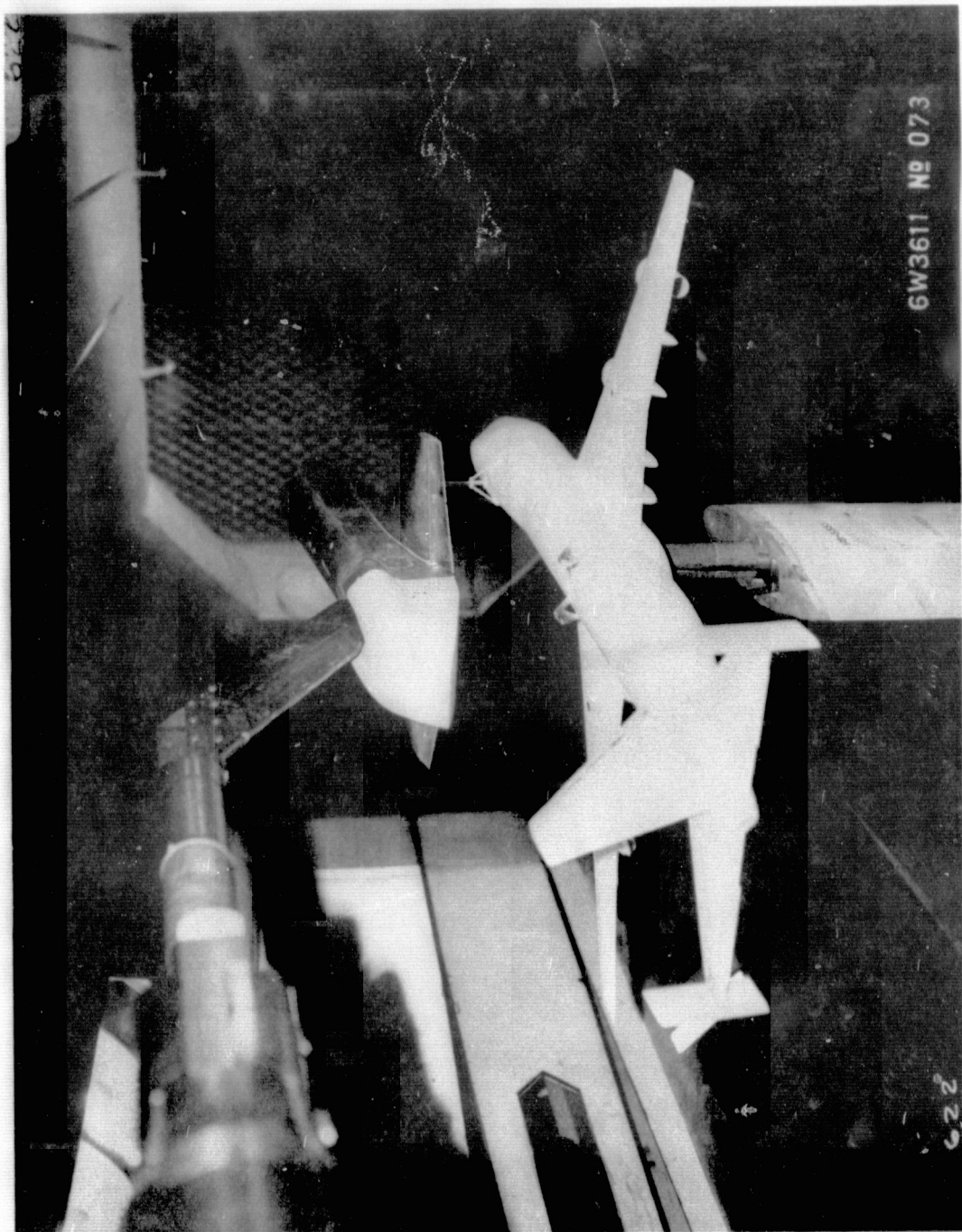
Figure 3. - Model photographs.



b. Orbiter Alone with Tail Cone TC_{5.1}

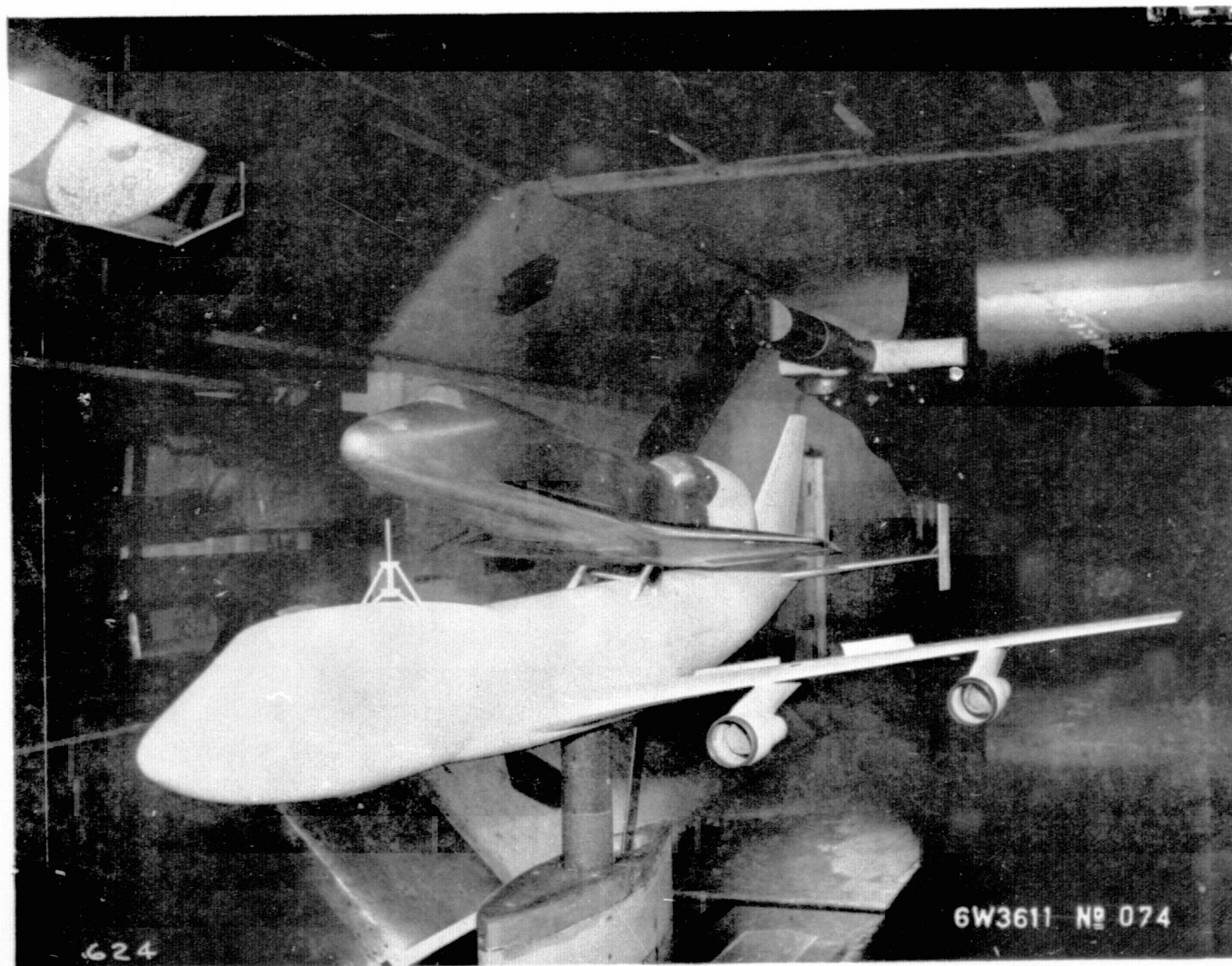
Figure 3. - Continued.

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c. Aft View of the Orbiter/747 Showing Vertical Displacement

Figure 3. - Continued.



d. Front View of the Orbiter at an Angle of Attack with Respect to the 747 Carrier

Figure 3. - Concluded.

DATA FIGURES

VOLUME 1 Figures 4-25 Pages 1-831

VOLUME 2 Figures 26-39 Pages 832-1863

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SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI .000 BETA0 -5.000
		BETAC -5.000 DY .000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SC.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

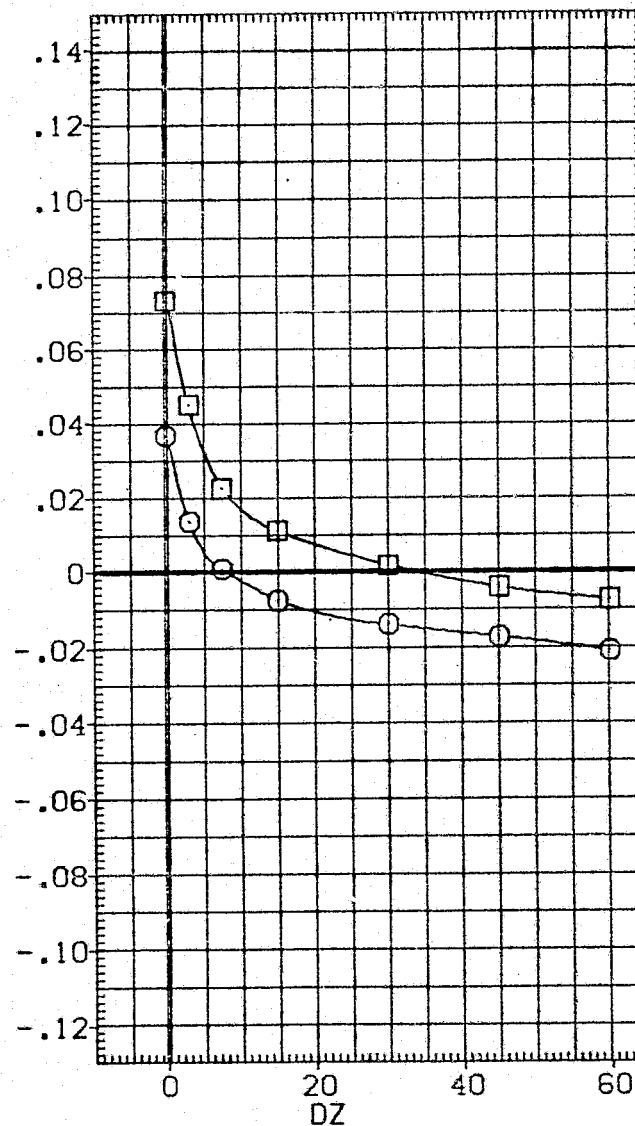
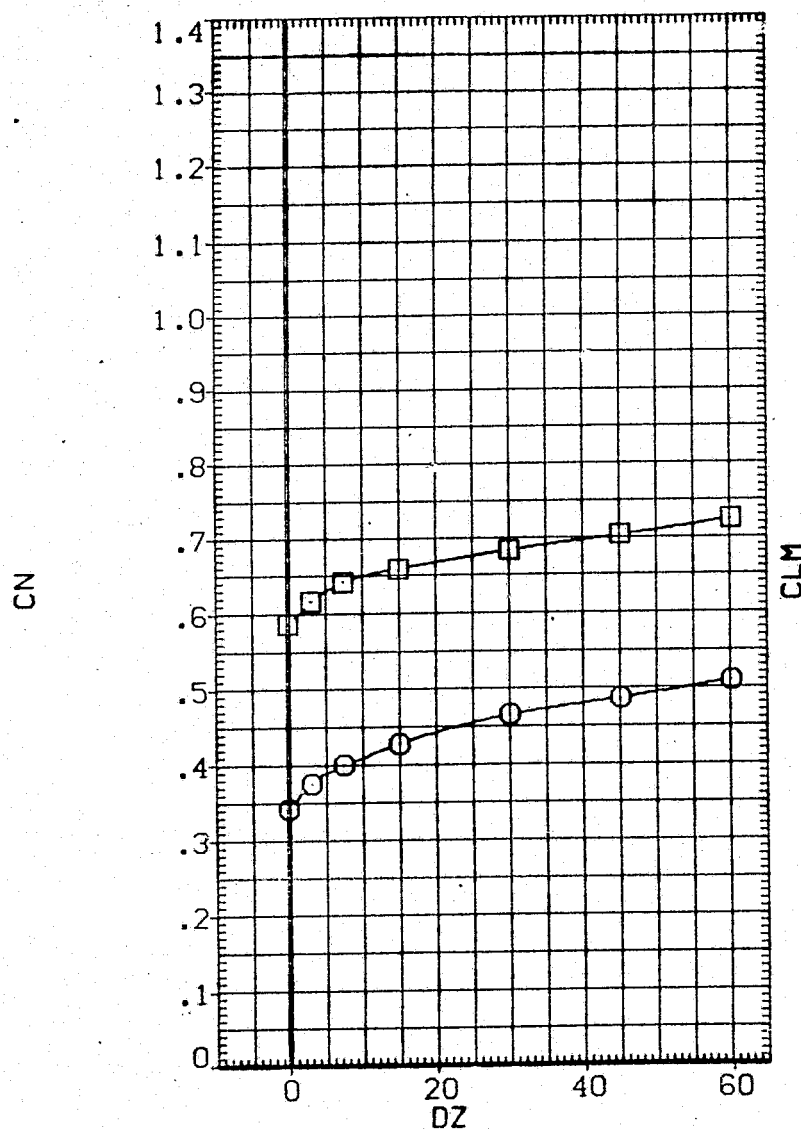


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN104)

SYMBOL



ALPHA0

10.000

14.000

ELV-1B

ELEVON

PHI

BETAC

DY

PARAMETRIC VALUES

.000

5.000

.000

-5.000

10.000

ELV-0B

MACH

BETA0

DY

ALPHAC

3.000

.600

-5.000

.000

4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

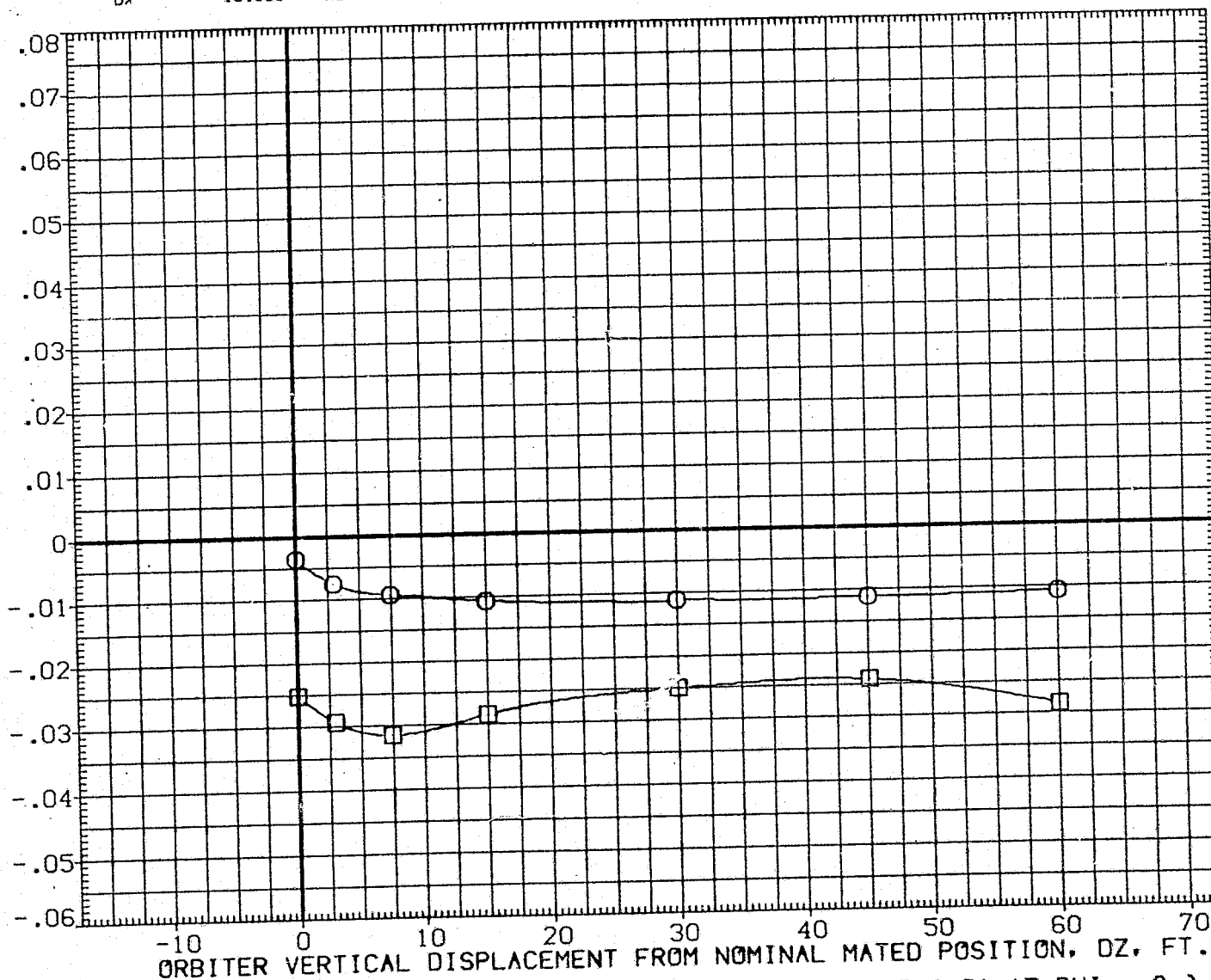


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN104)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000		.000	3.000	
□	14.000	ELEV0N	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

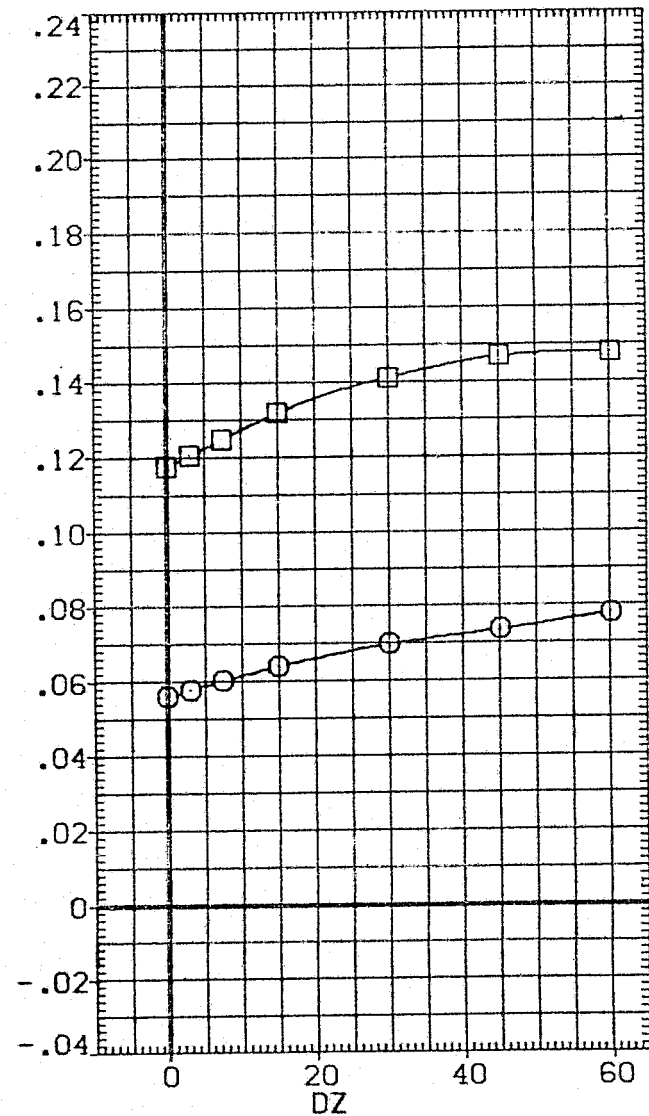
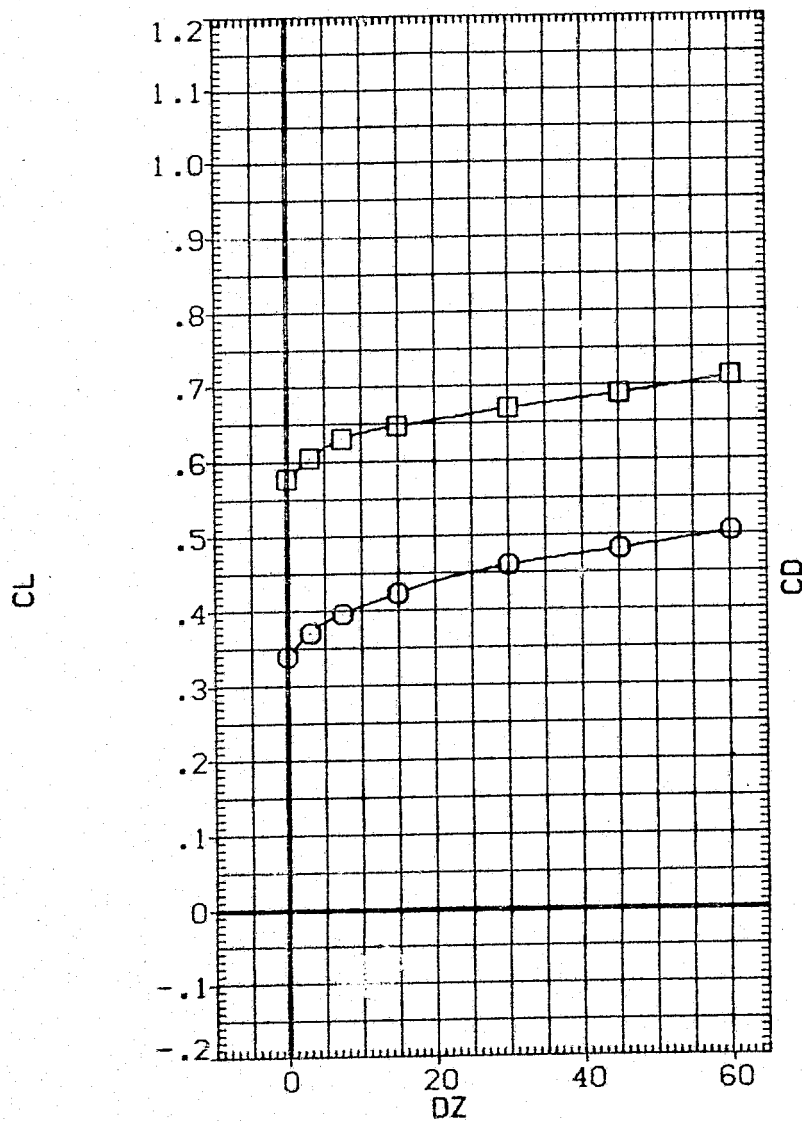


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN104)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETAC	-5.000
		BETAC	-5.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

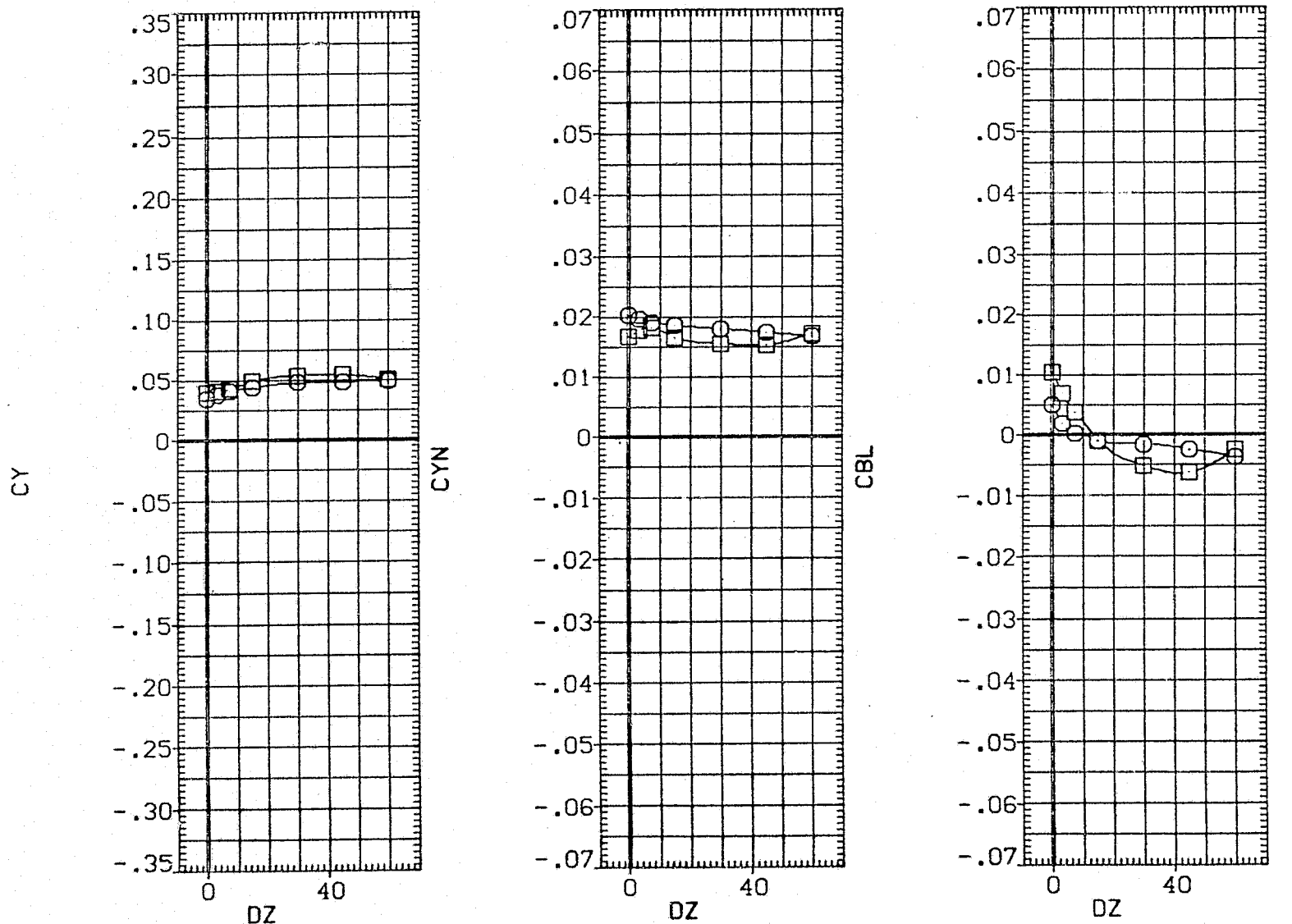


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETAD	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

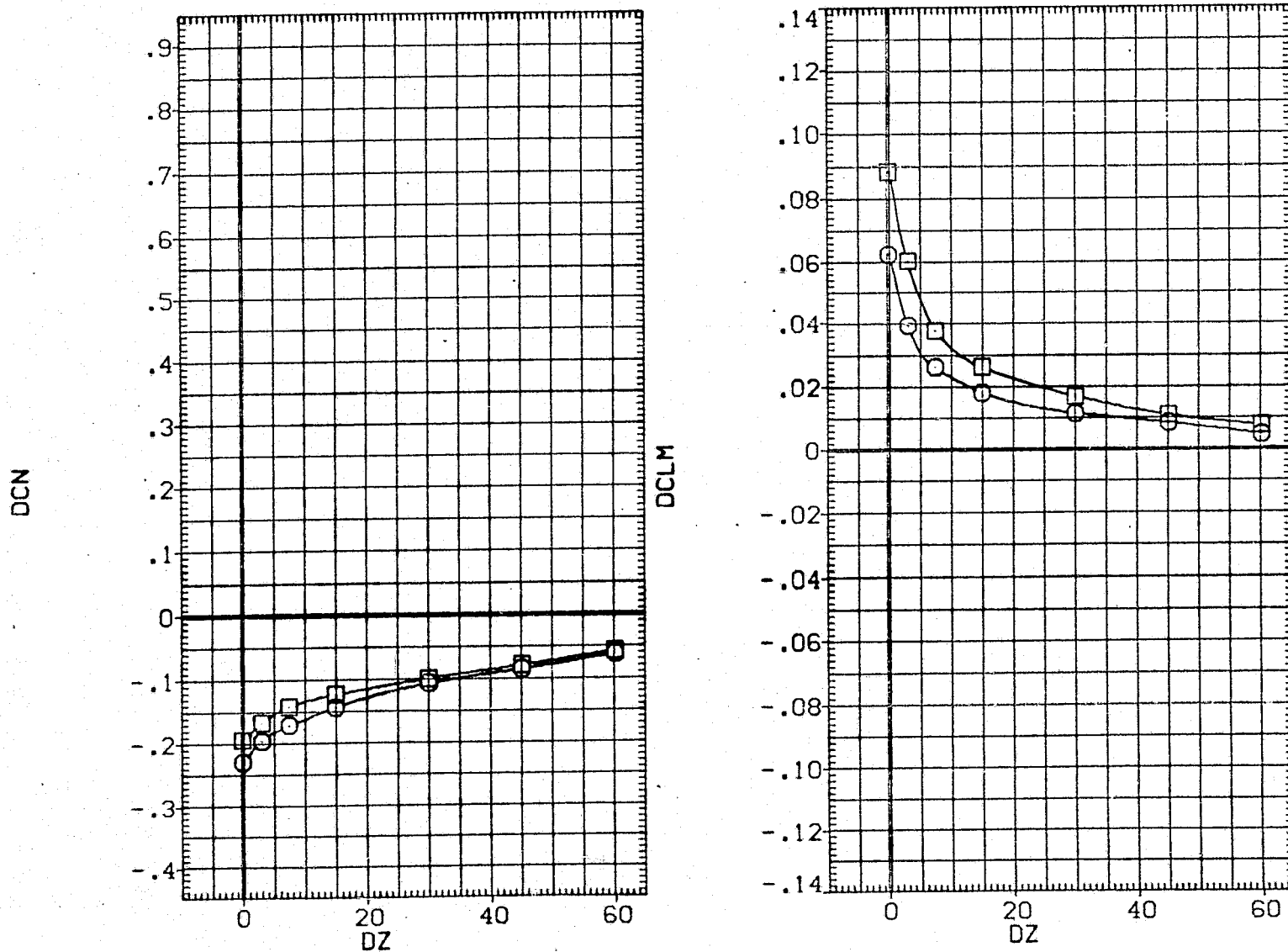


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (104 - 007)(VGN104)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	10.000	ALPHAC	4.000	BETAC	-5.000	SREF	2690.0000 SQ.FT.
□	14.000	ELV-1B	.000	ELV-0B	3.000	LREF	474.8100 IN.
		ELEVON	5.000	MACH	.600	BREF	936.6800 IN.
		PHI	.000	DX	10.000	XMRP	1109.0000 IN.X0
		DY	.000	BETA0	-5.000	YMRP	.0000 IN.Y0
						ZMRP	375.0000 IN.Z0
						SCALE	.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

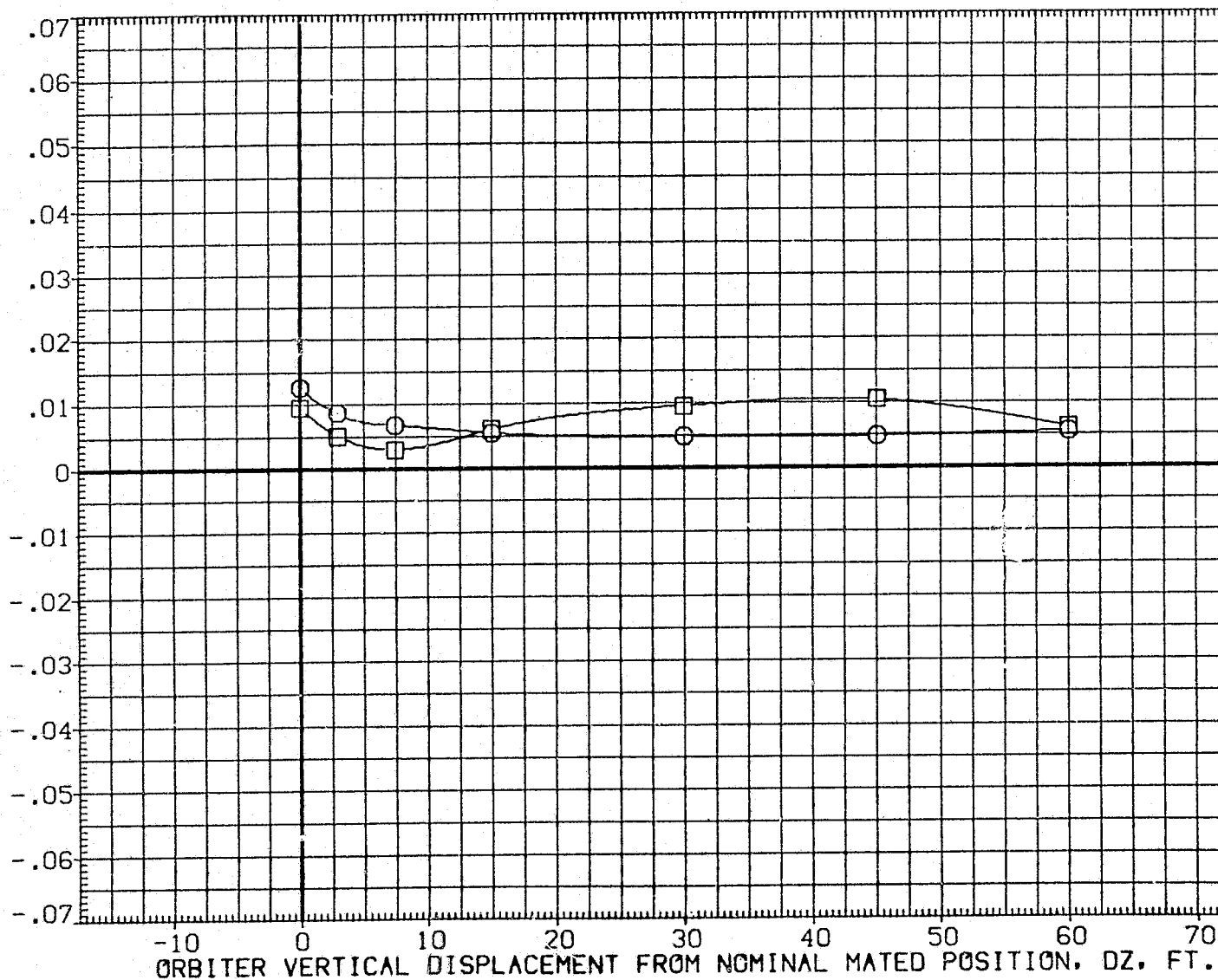


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000
14.000

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0300	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

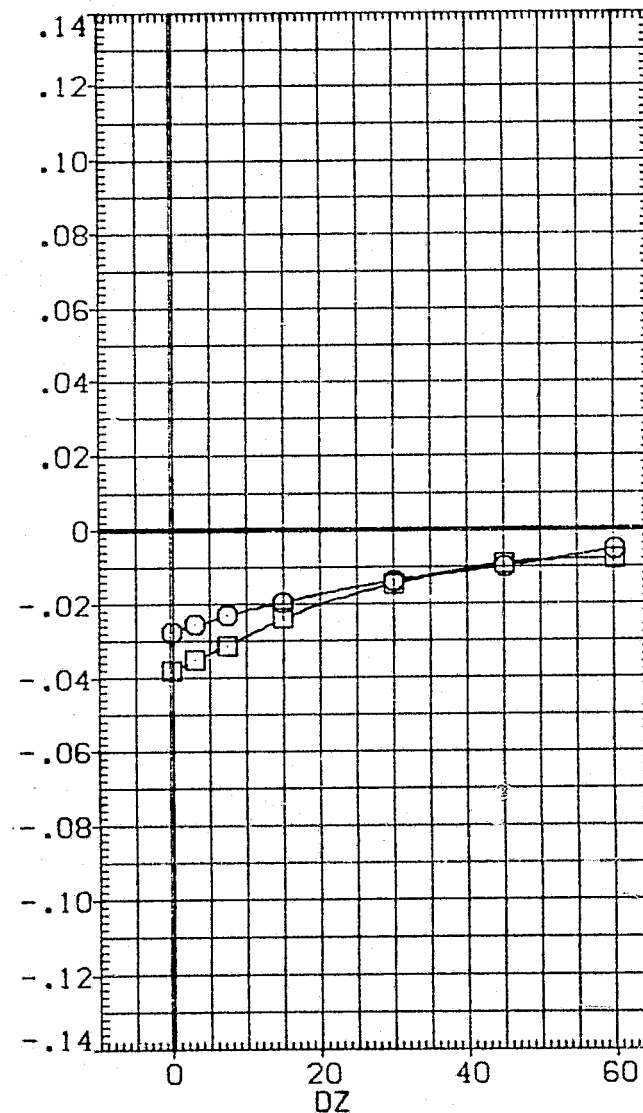
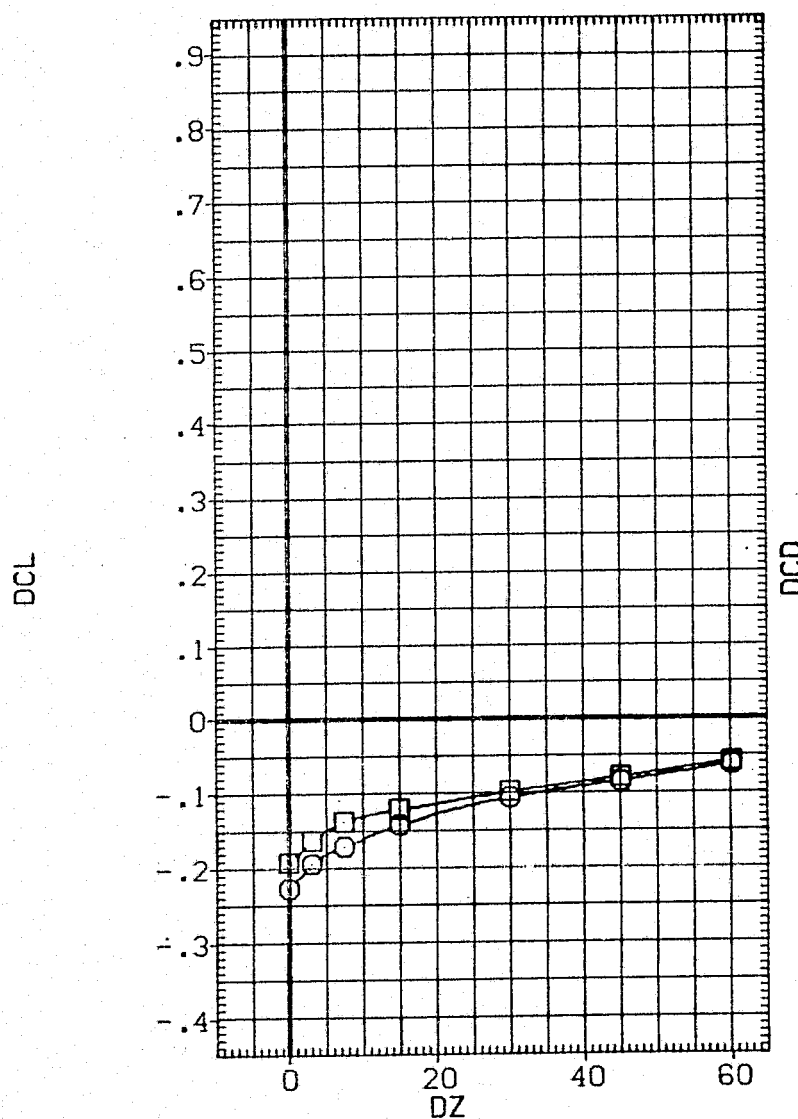


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN105)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	3.000
○	10.000	ELEVON	.000	MACH	.600
□	14.000	PHI	5.000	BETA0	-5.000
		BETAC	-5.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

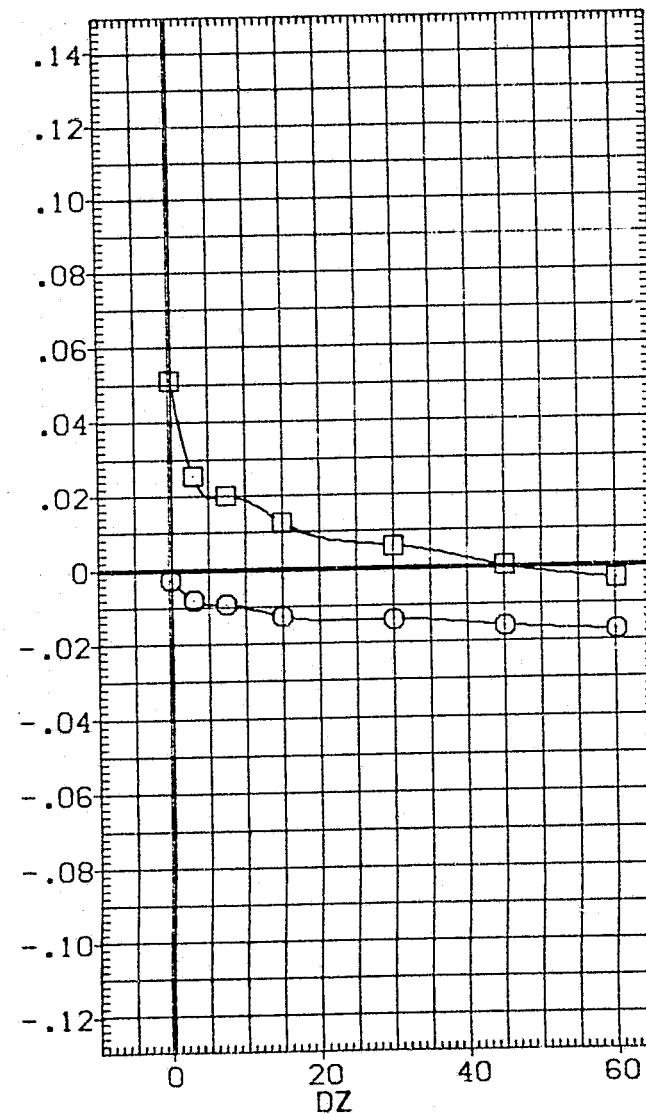
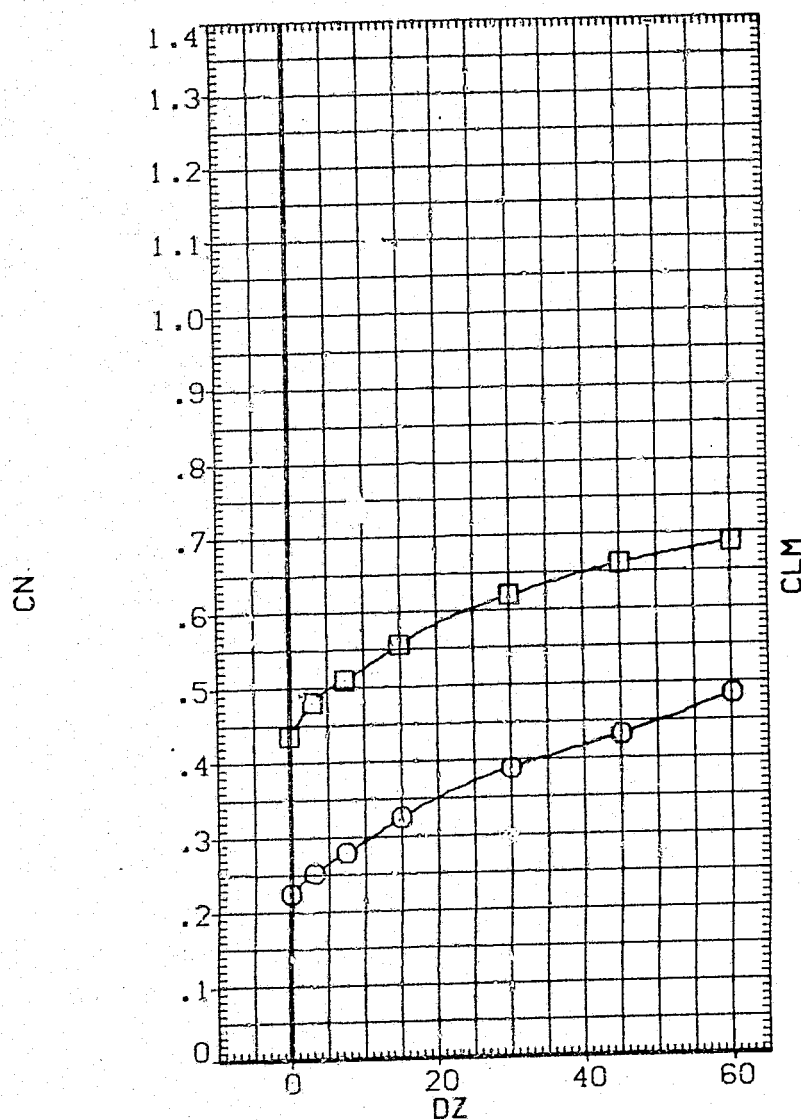


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

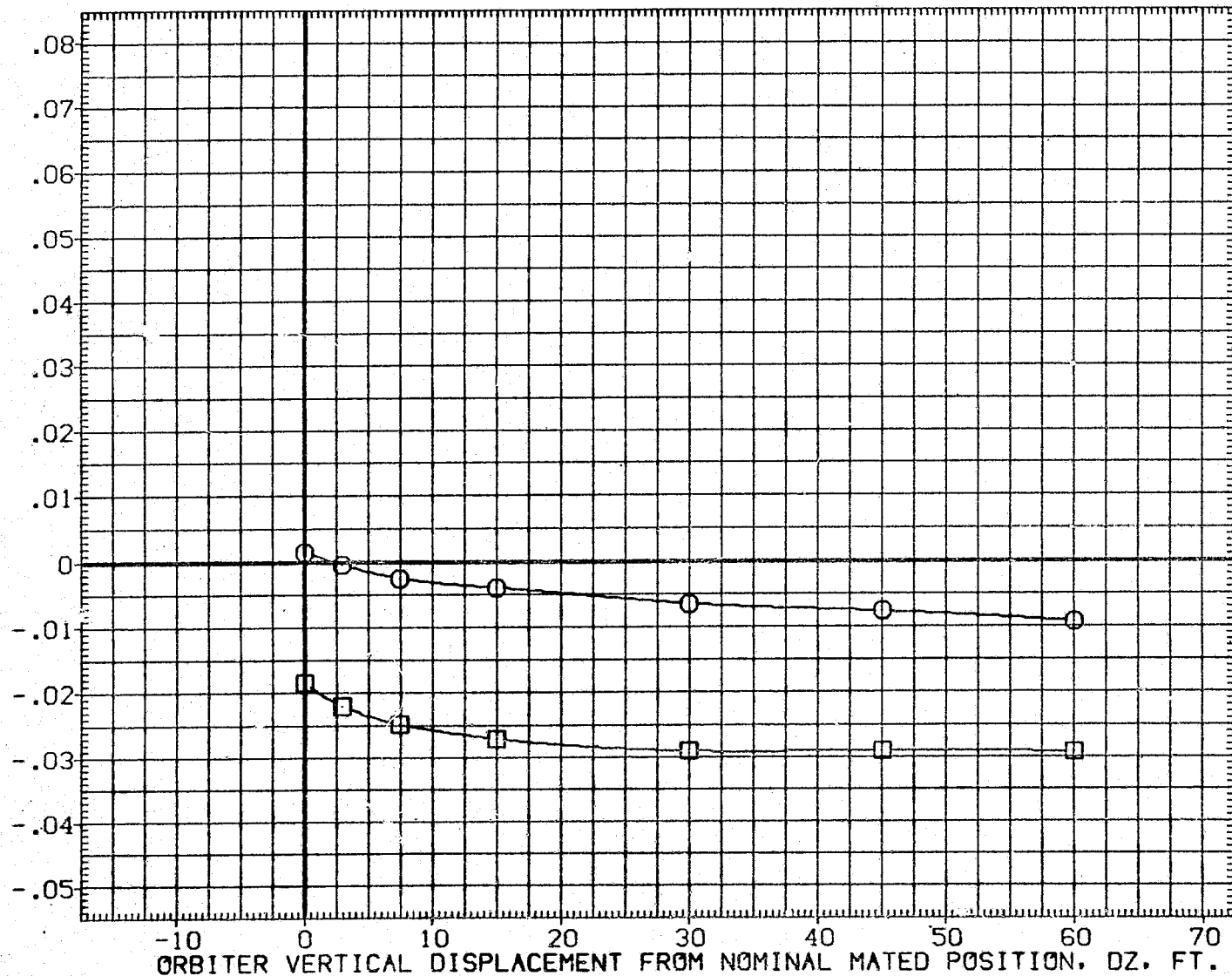


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN105)

SYMBOL	ALPHA0		PARAMETRIC VALUES	
	10.000	ELV-1B	.000	ELV-0B
○	14.000	ELEVON	5.000	MACH
□		PHI	.000	BETA0
		BETAC	-5.000	DY
		DX	10.000	ALPHAC
				8.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

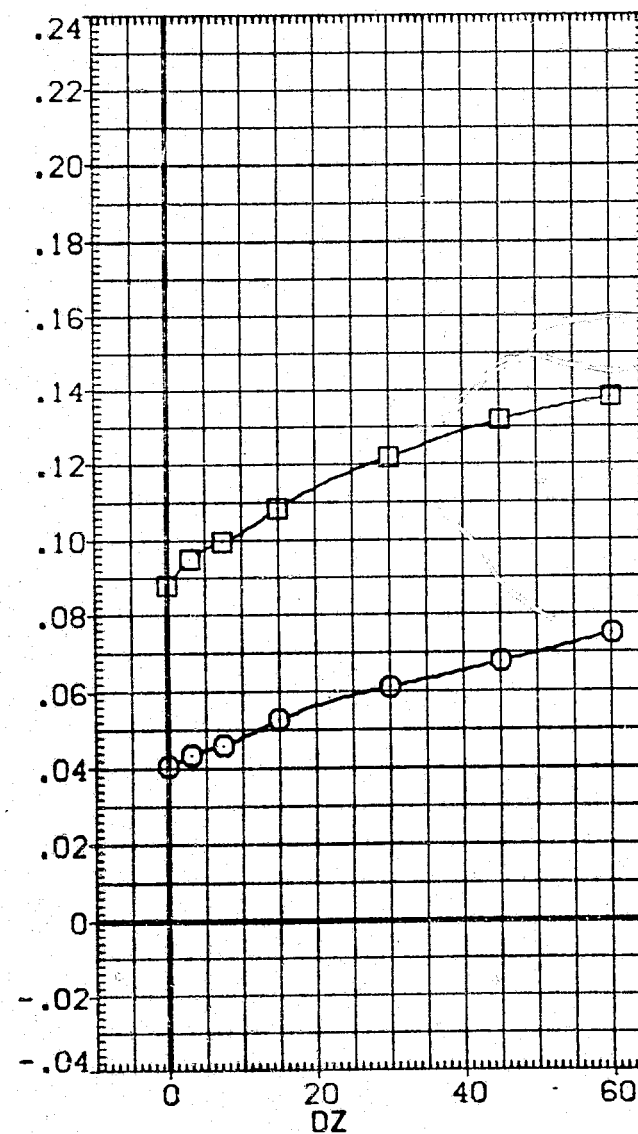
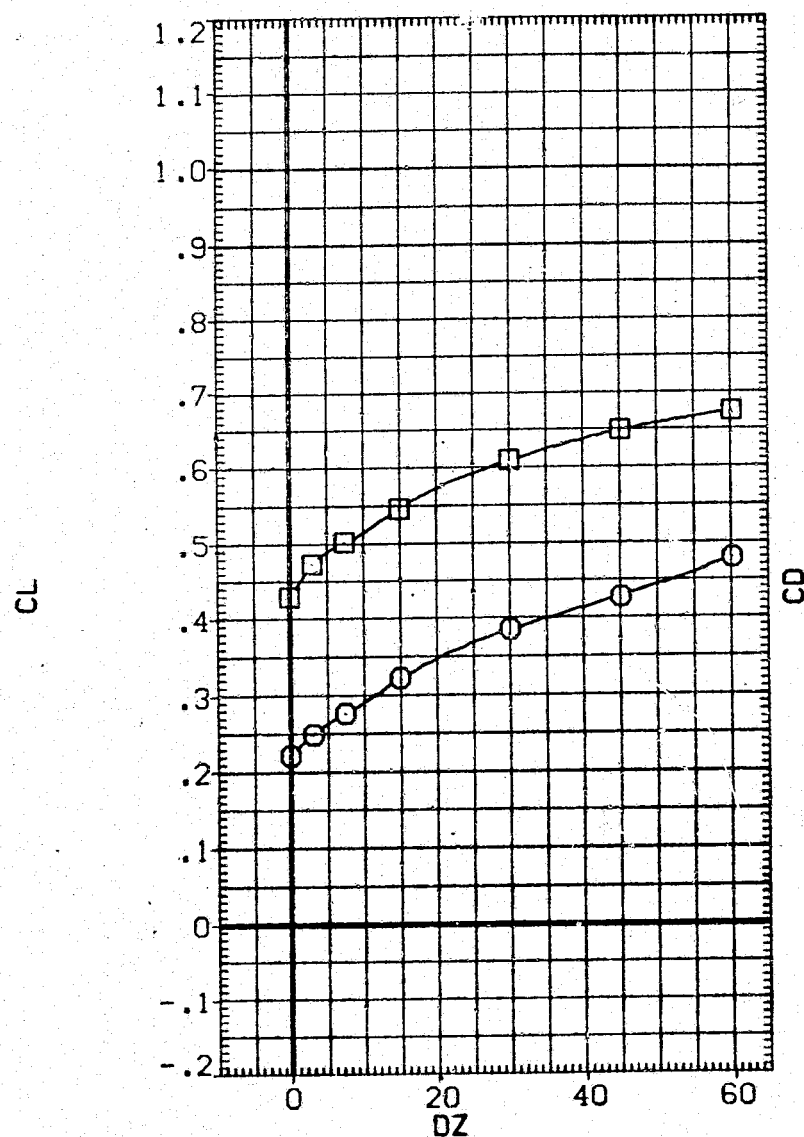


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	ELEVON	.000	3.000
□	14.000	PHI	5.000	.500
		BETAC	.000	-5.000
		DX	-5.000	.000
			10.000	ALPHAC
				8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

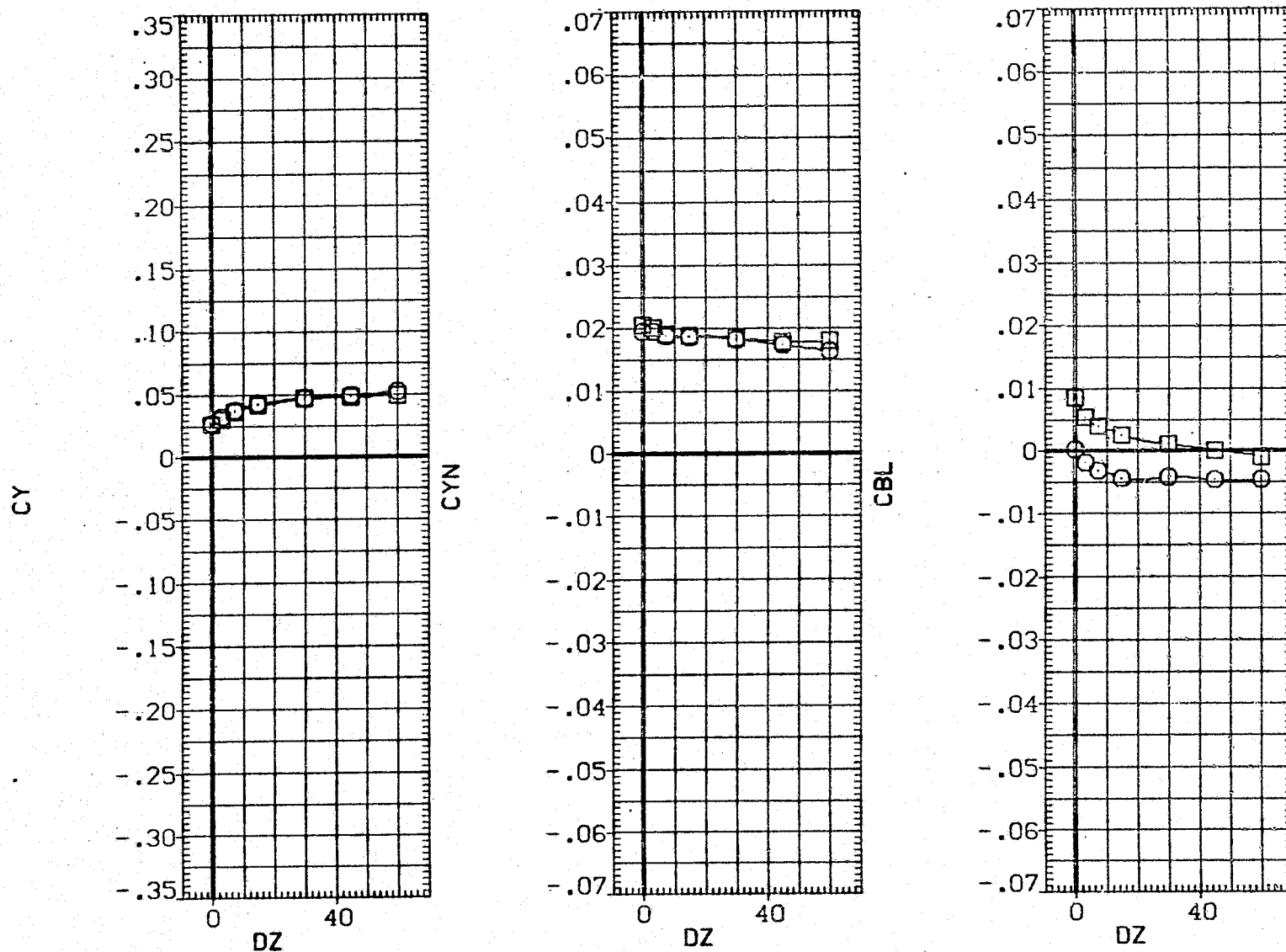


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (105 - 007)(VGN105)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC -5.000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

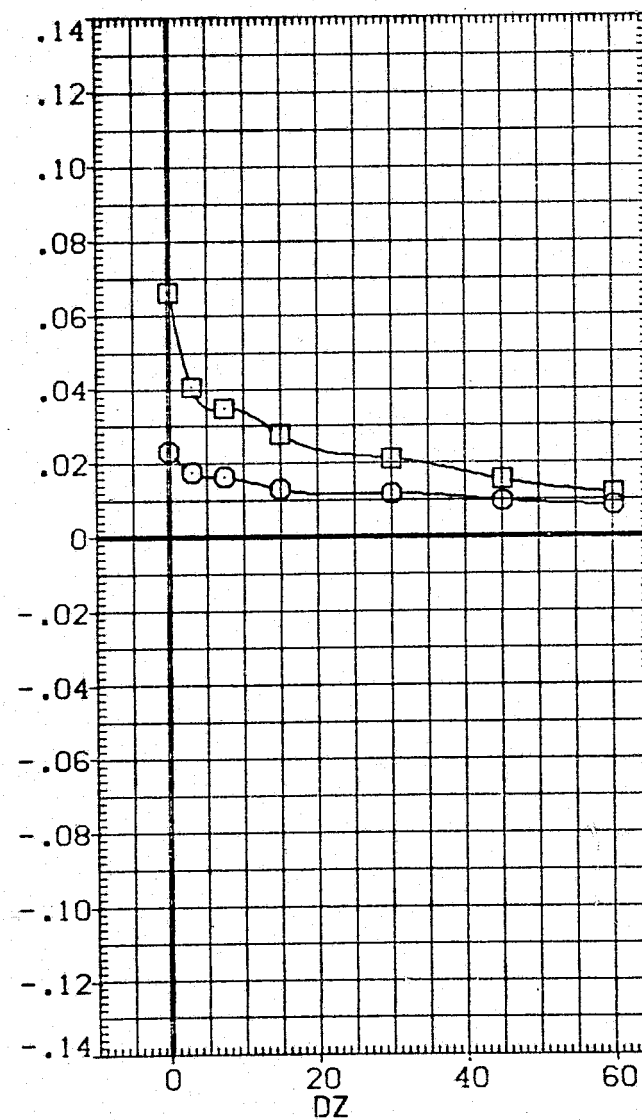
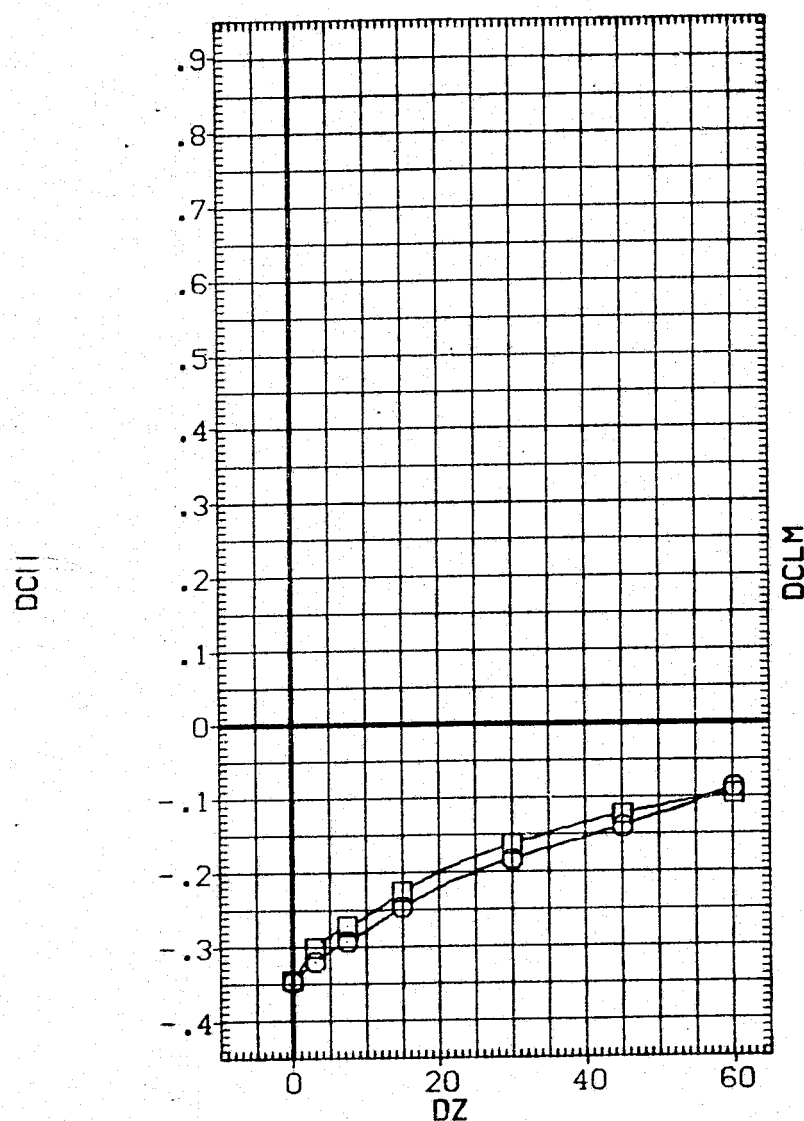


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

ALPHAC

14.000

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

.000

ELV-0B

5.000

MACH

.000

DX

BETA0

-5.000

3.000

.600

10.000

-5.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

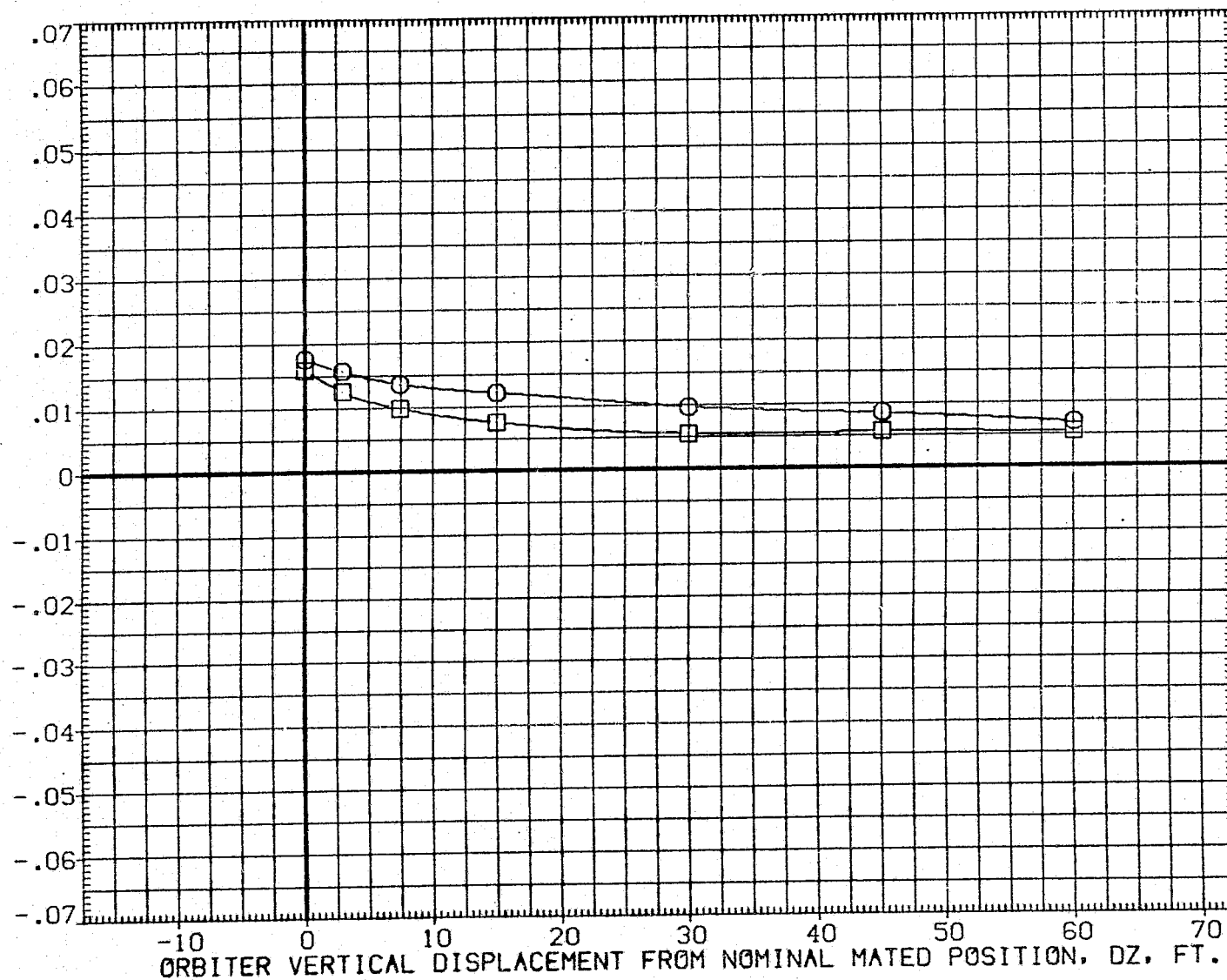


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (105 - 007)(V6N105)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

8.000 BETAC -5.000

ELV-18

.000 ELV-08 3.000

ELEVON

5.000 MACH .600

PHI

.000 DX 10.000

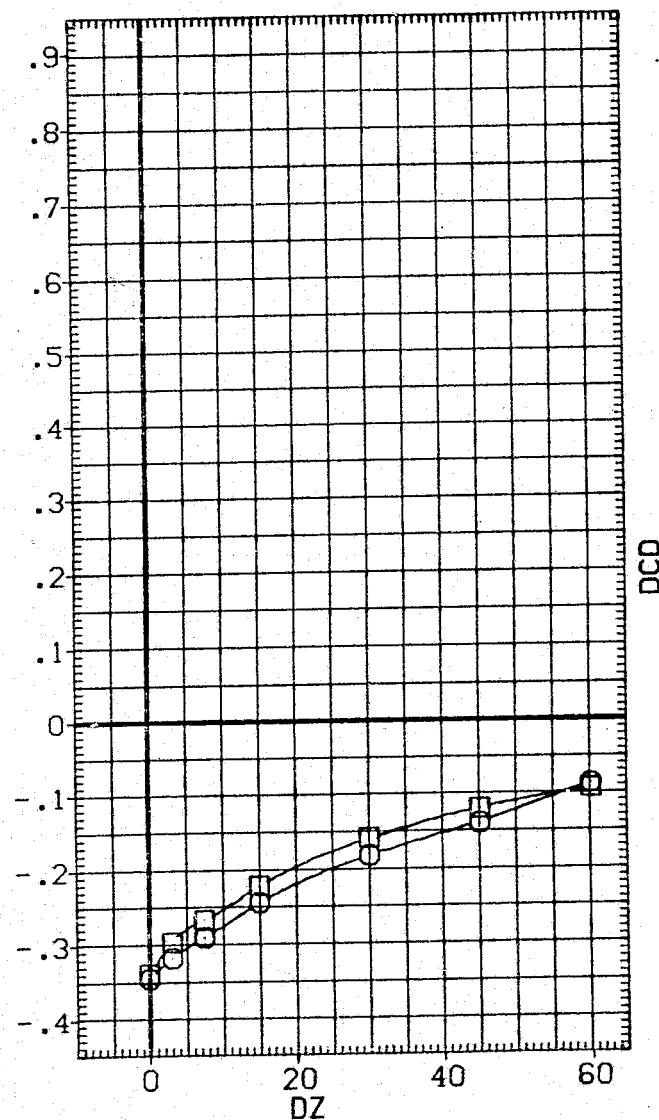
DY

.000 BETA0 -5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL



DCD

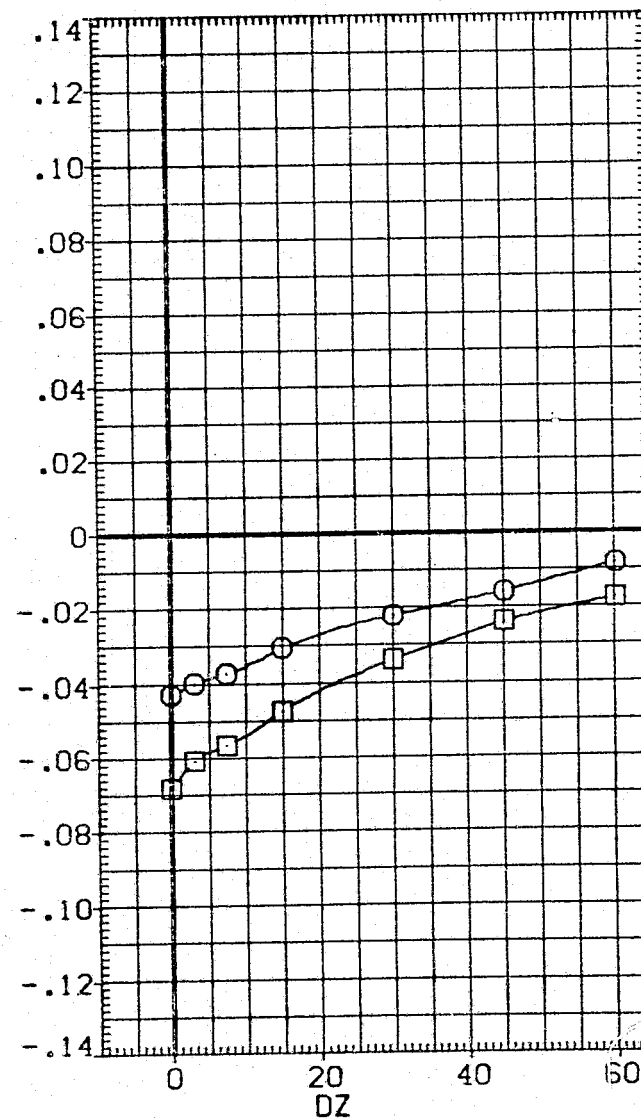


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	3.000
		ELEV0N	5.000	MACH	.600
		BETA0	-5.000	BETAC	-5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	336.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

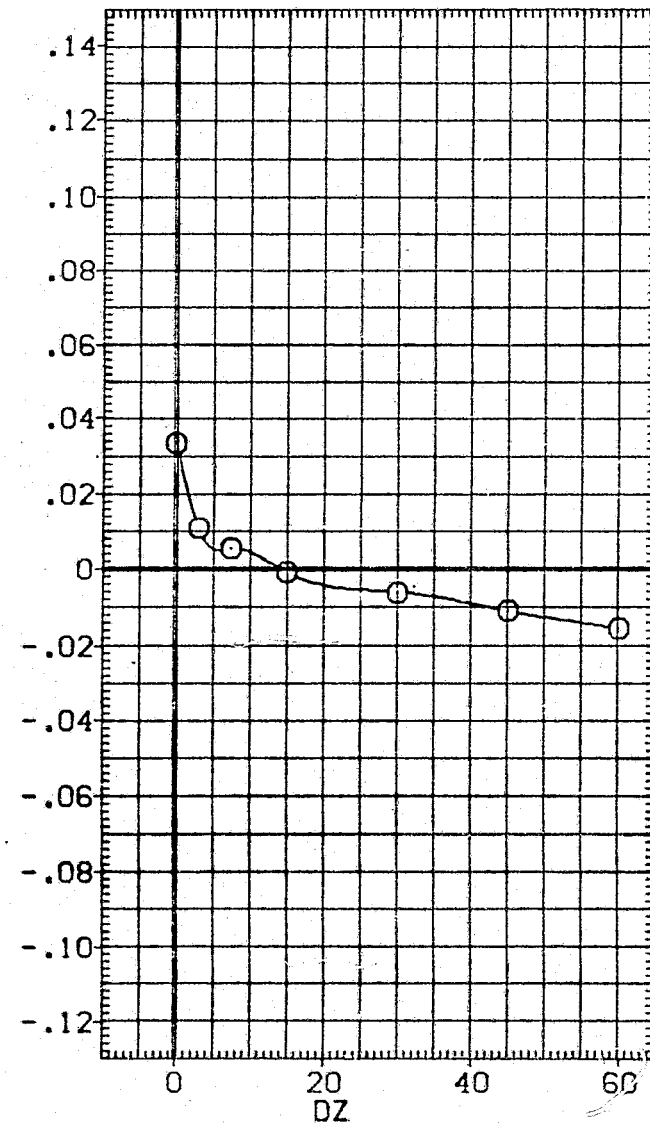
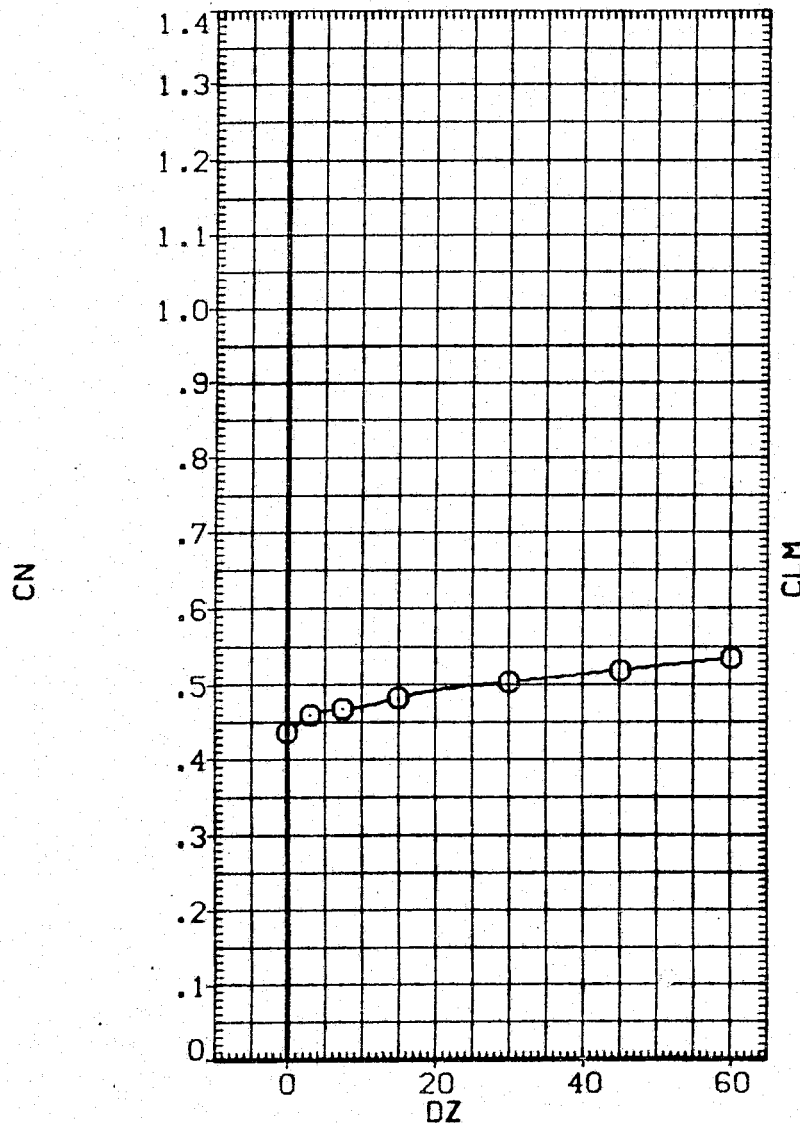


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 SI

ORBITER DATA(NGN106)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B .000	ELV-0B 3.000		
		ELEVON 5.000	MACH .600		
		BETA0 -5.000	BETAC -5.000		
		PHI .000	DY 10.000		
		DX .000	ALPHAC 4.000		

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

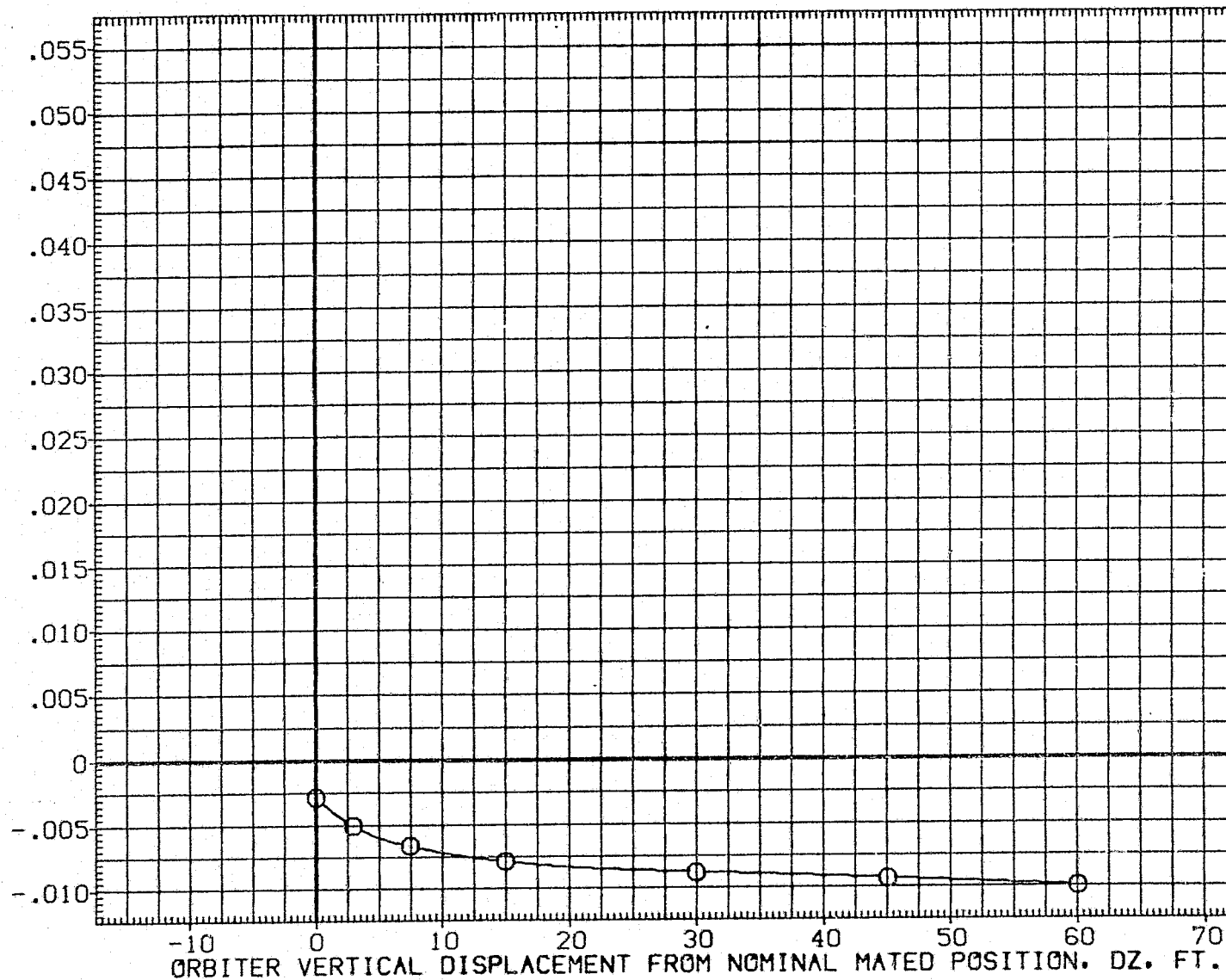


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	3.000
		ELEV0N	5.000	MACH	.600
		BETA0	-5.000	BETAC	-5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

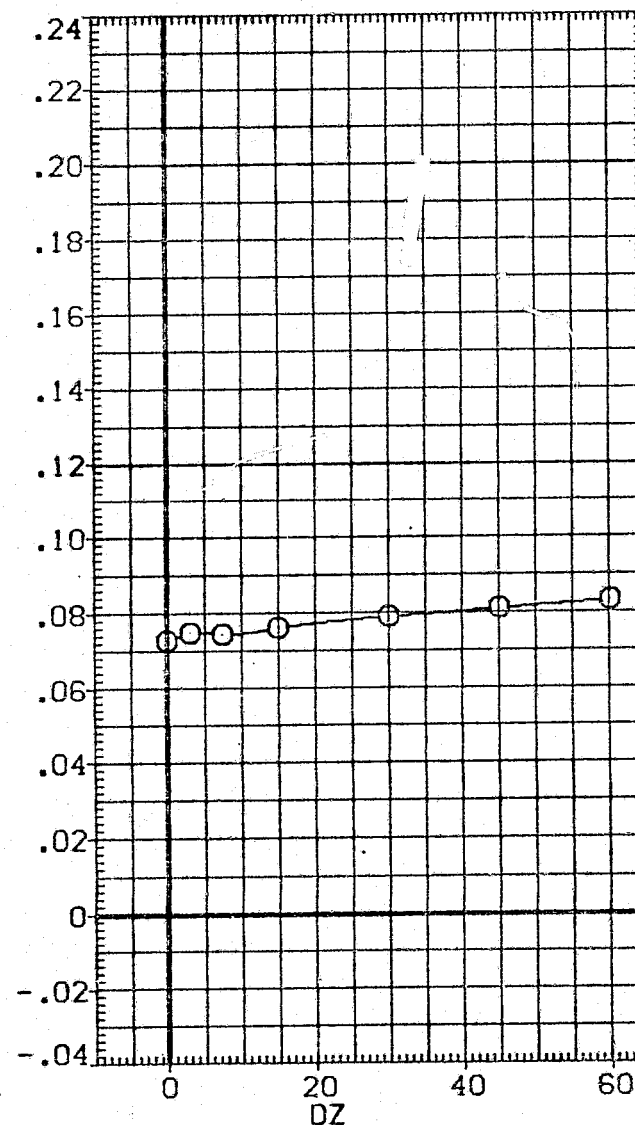
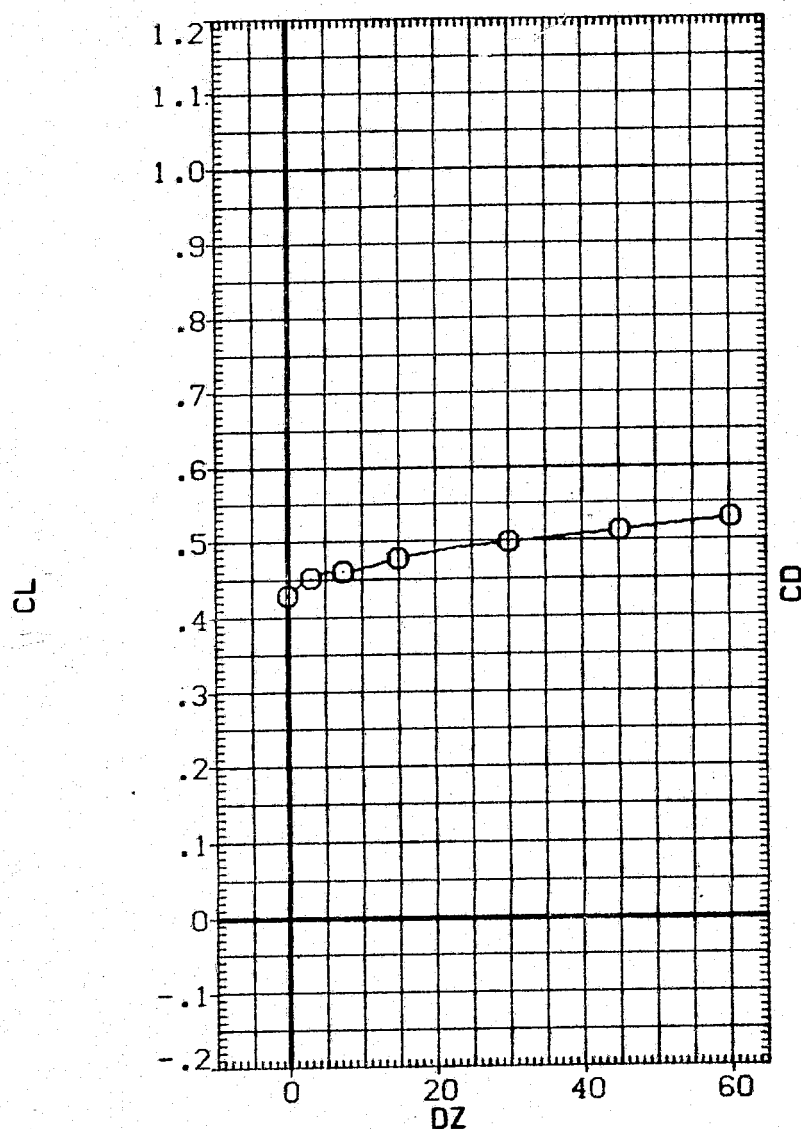


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN106)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	-5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

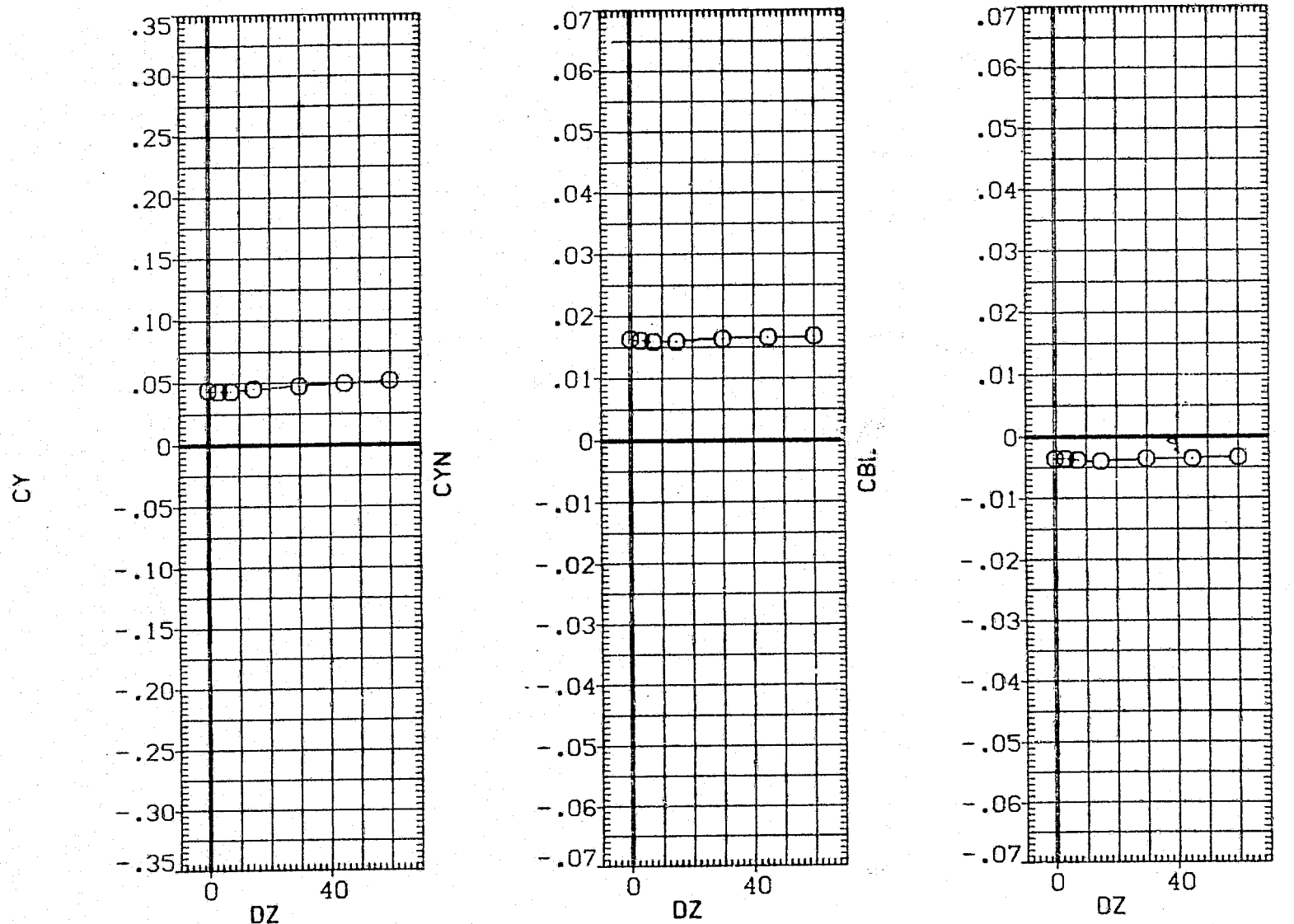


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL
○

ALPHA0
10.000

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	10.000	BETA0	-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

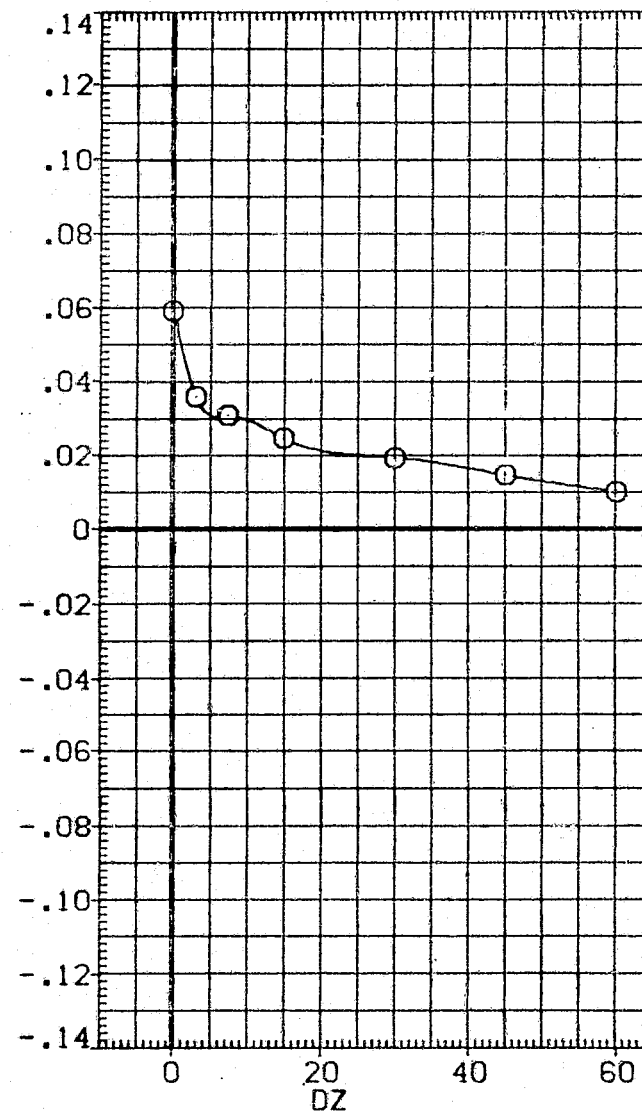
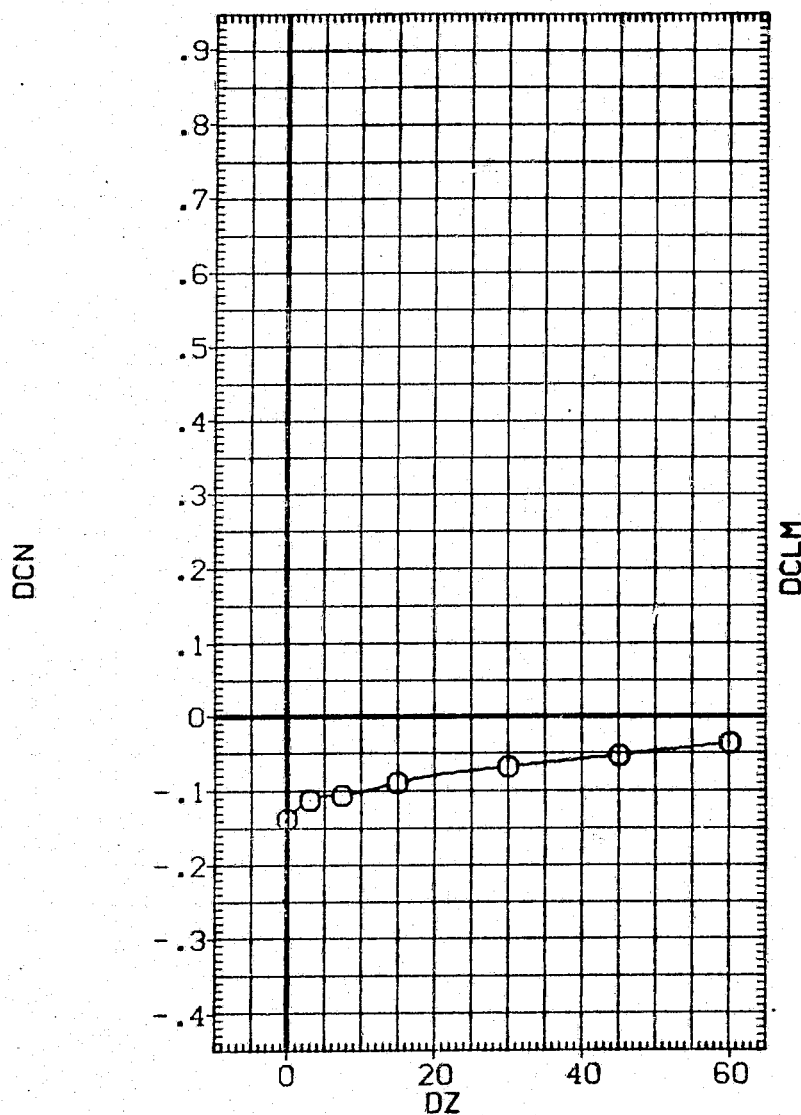


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (106 - 007)(VGN106)

SYMBOL
○

ALPHA0
10.000

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	10.000	BETA0	-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

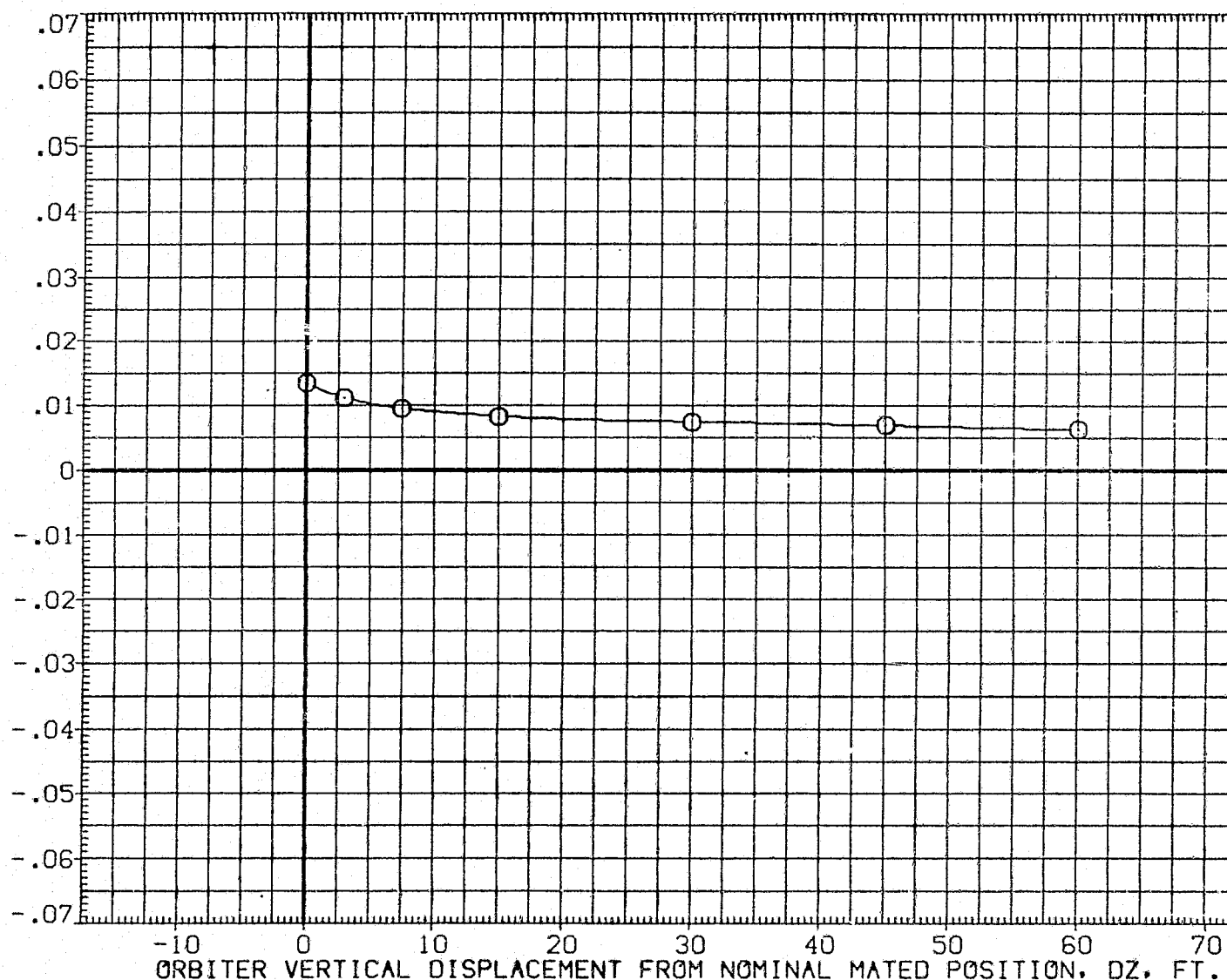


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL \bigcirc ALPHA0
 10.000

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	10.000	BETA0	-5.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

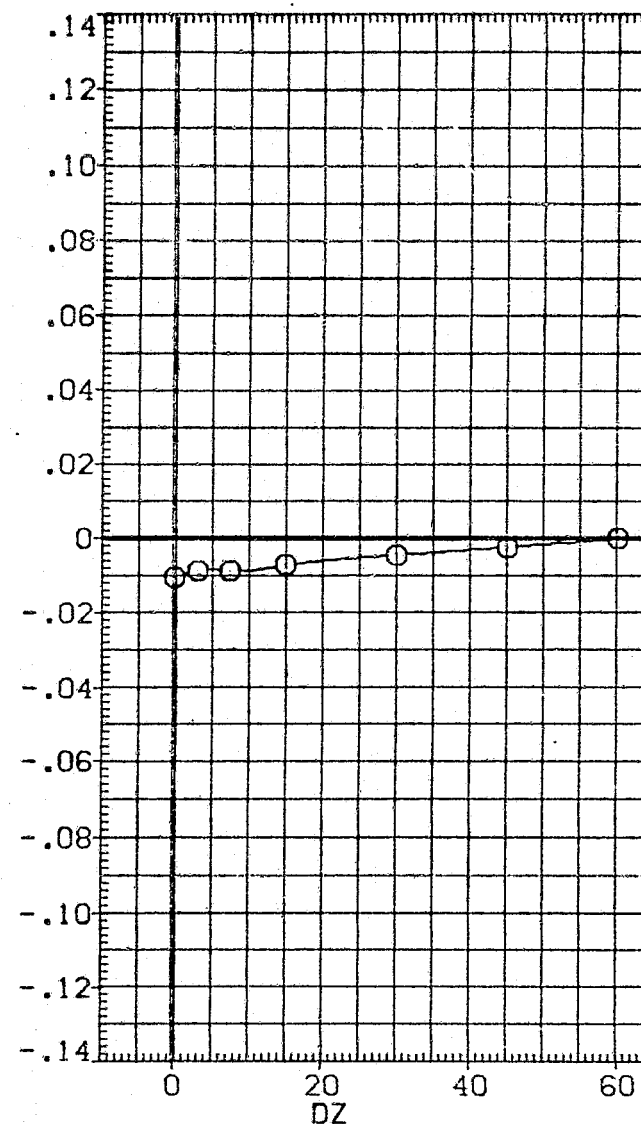
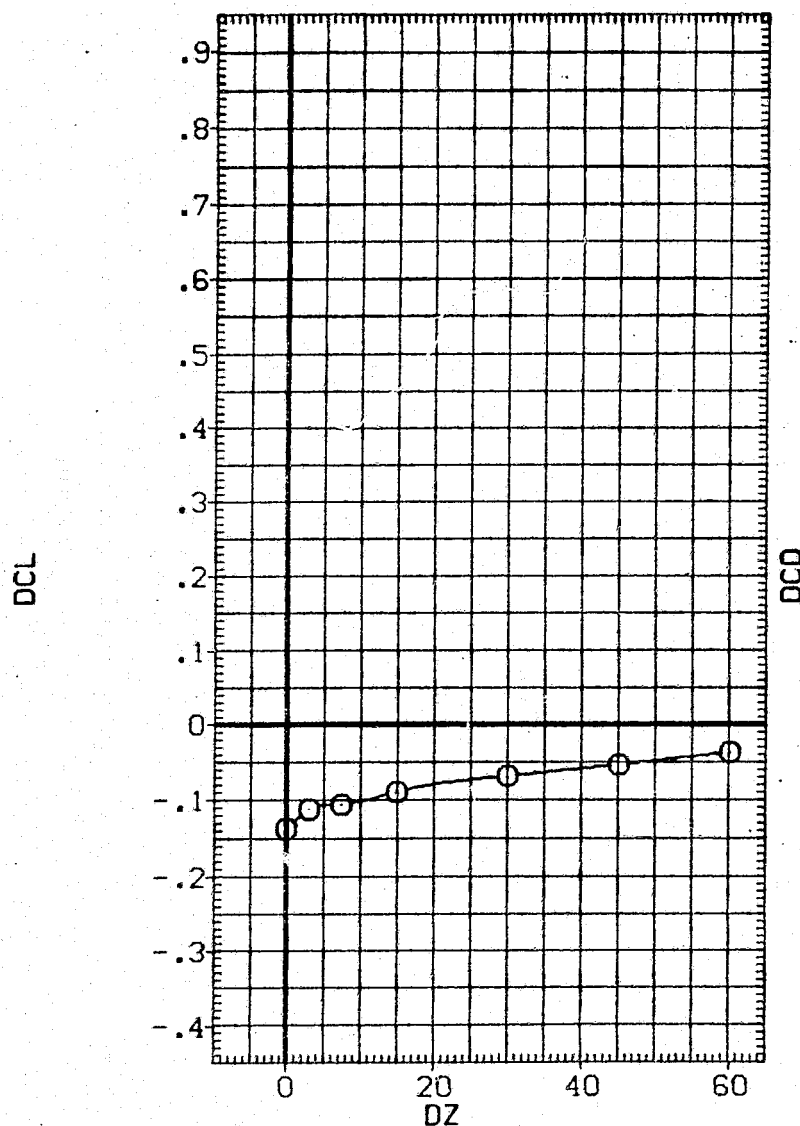


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN107)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

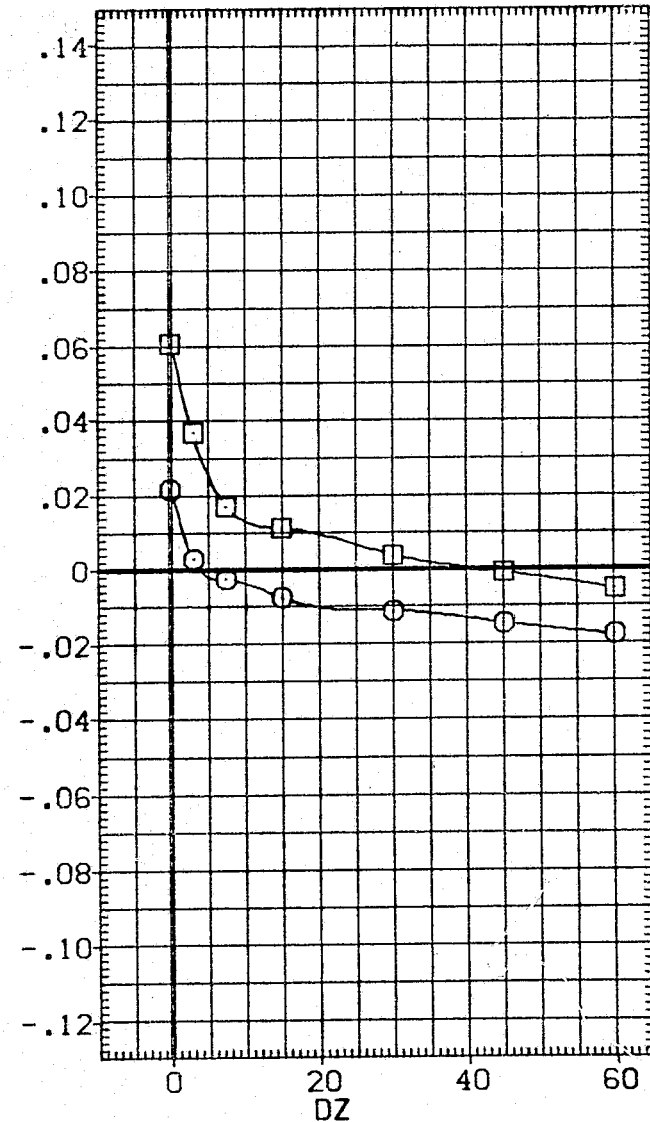
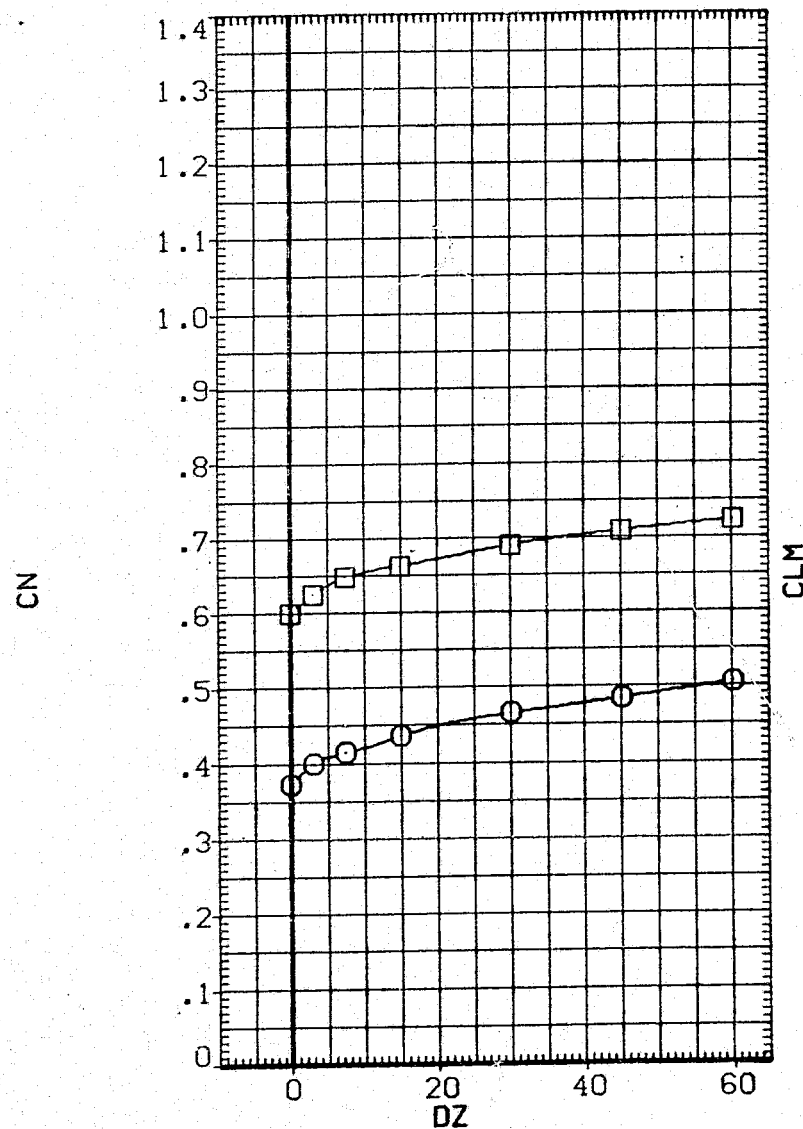


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI .000 BETA0 -5.000
		BETAC -5.000 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

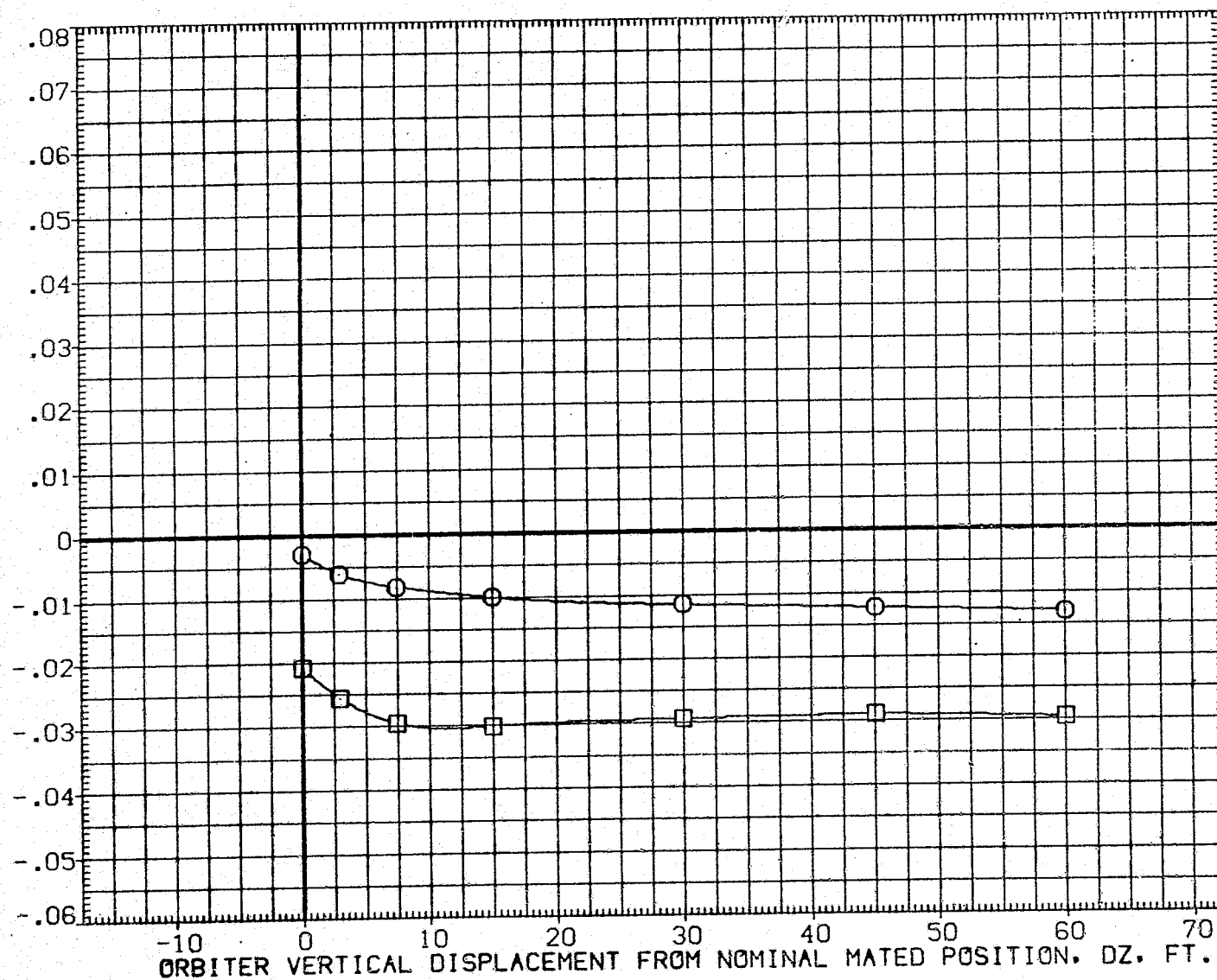


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN107)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SD.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

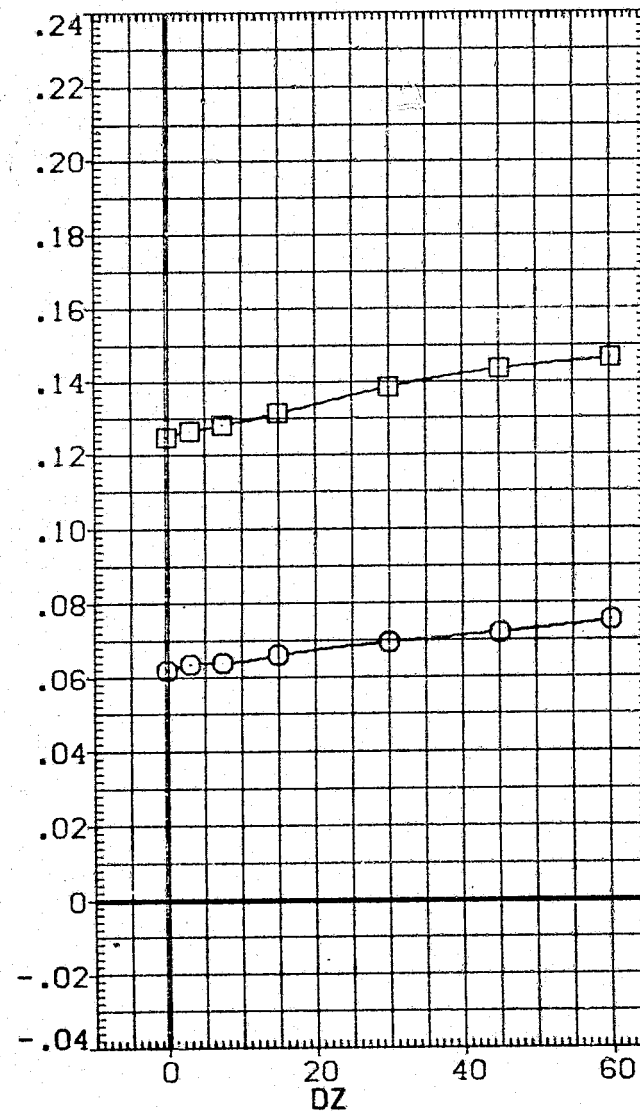
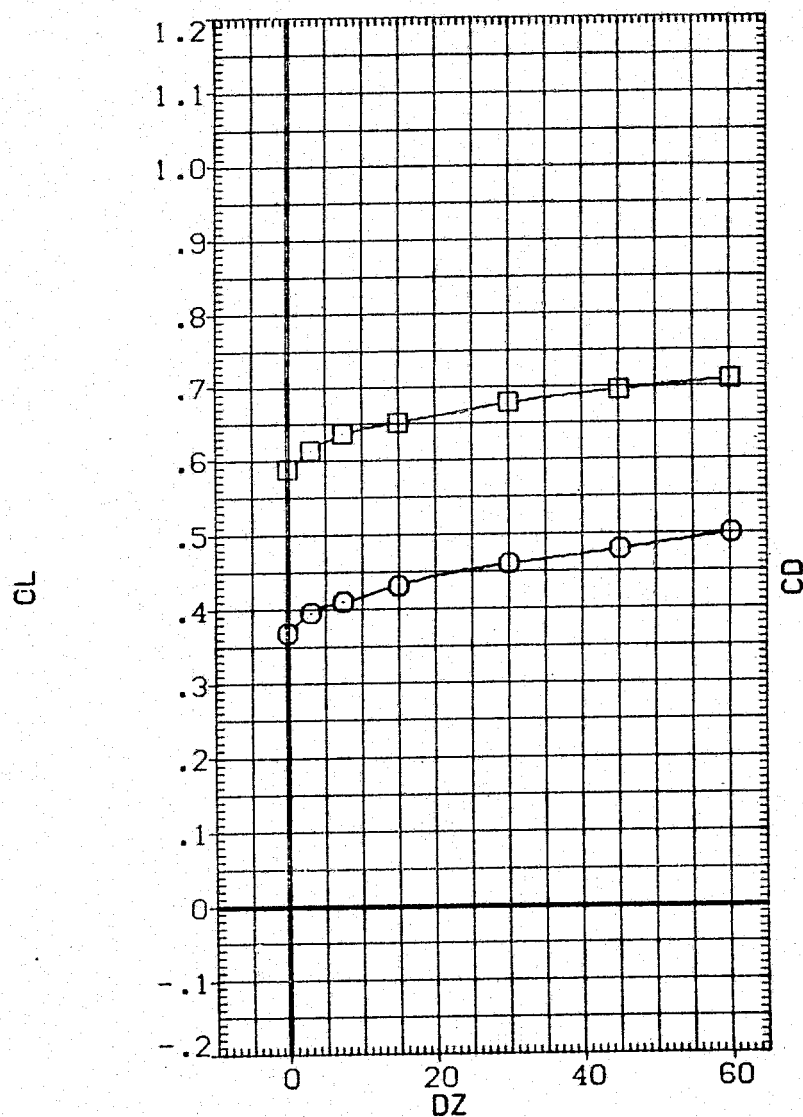


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-1B .000	ELV-0B 3.000
□	14.000	ELEVON 5.000	MACH .600
		PHI .000	BETA0 -5.000
		BETAC -5.000	DY 10.000
		DX 10.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

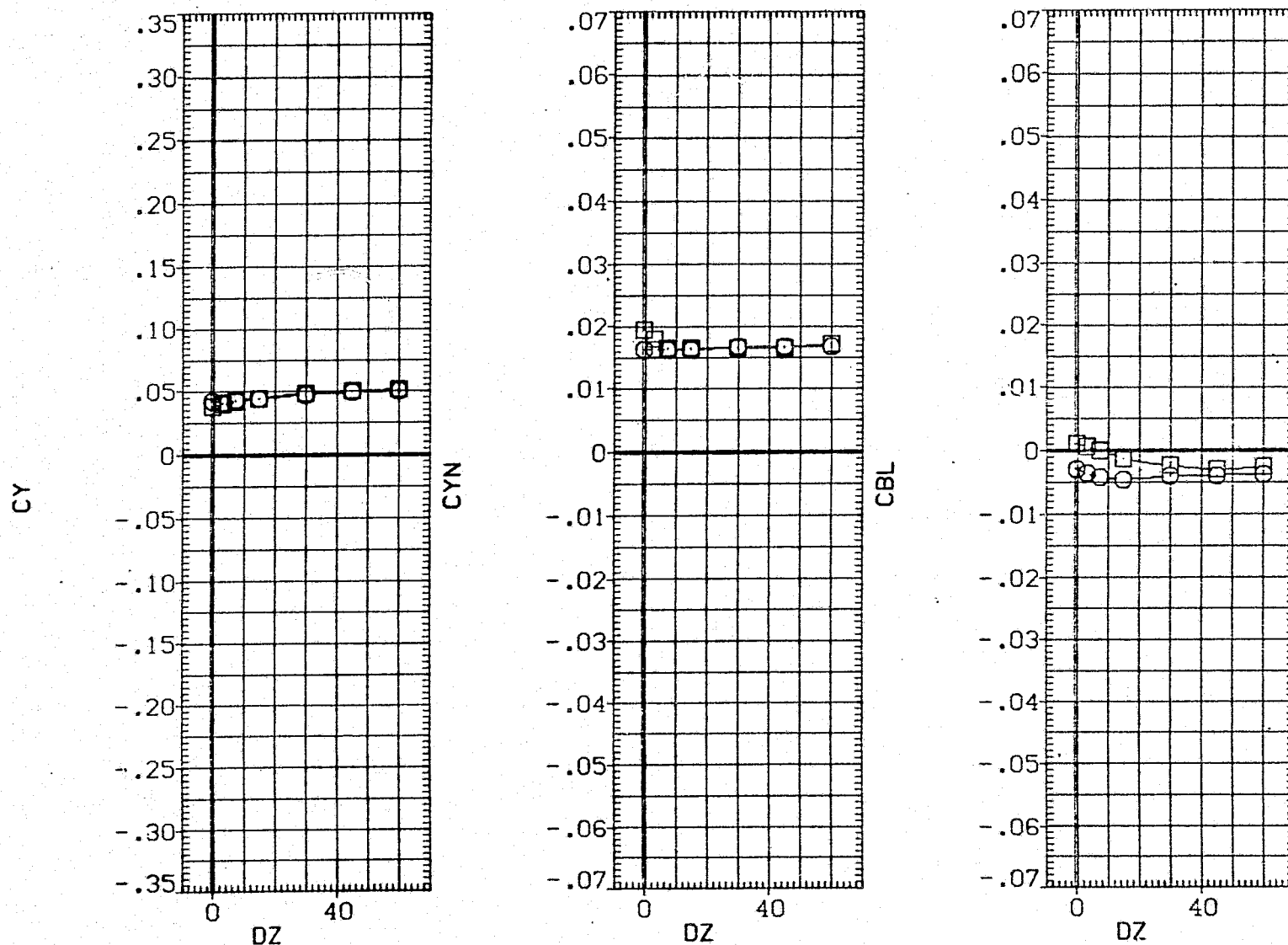


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (107 - 007) (VGN107)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	14.000	ALPHA0	4.000	BETAC	-5.000
○			ELV-IB	.000	ELV-OB	3.000
□			ELEVON	5.000	MACH	.600
			PHI	.000	DX	10.000
			DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

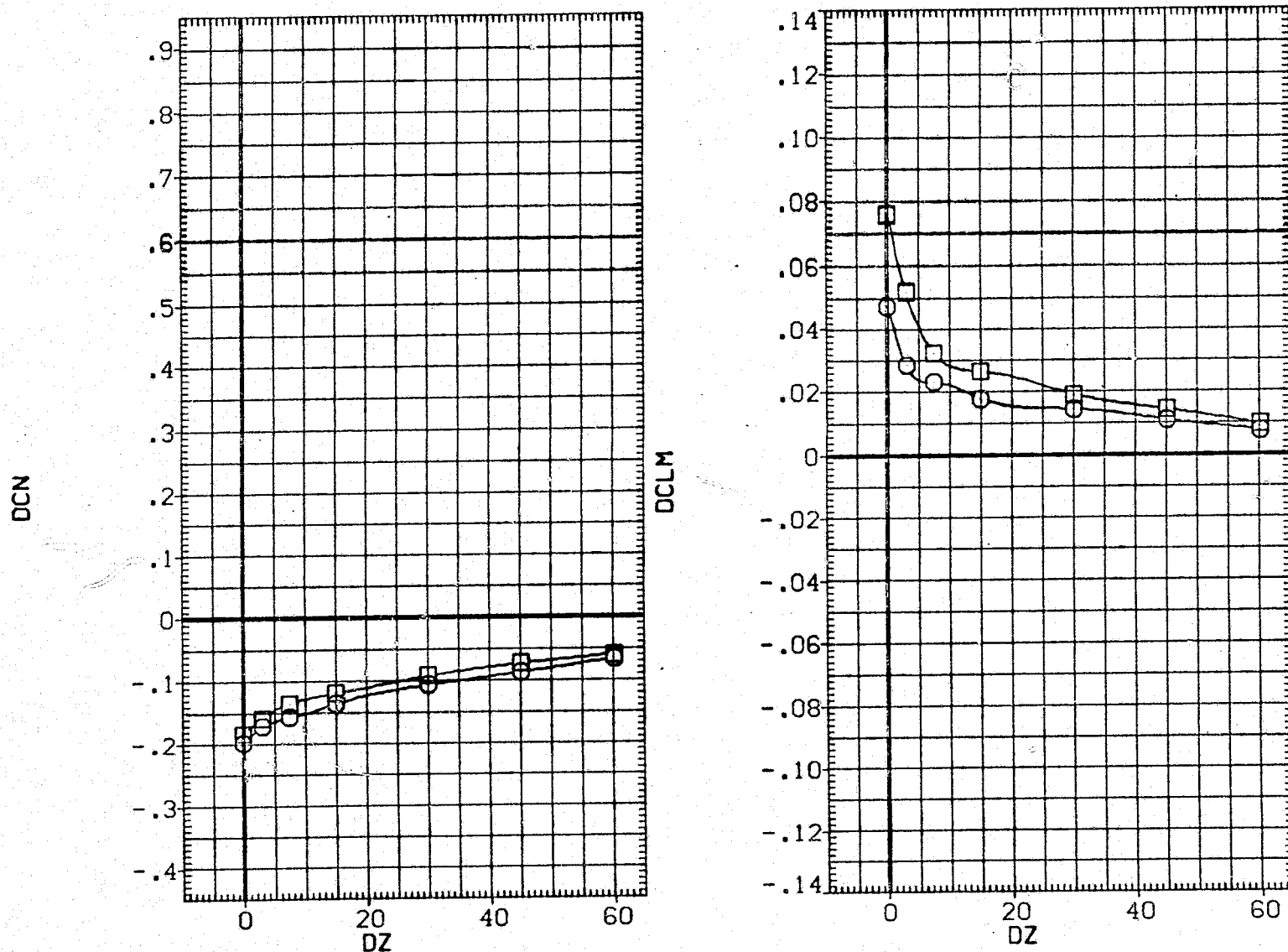


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	PARAMETRIC VALUES				REFERENCE INFORMATION		
	ALPHA0	ALPHAC	BETAC	BETAC	SREF	2690.0000	50.FT.
○	10.000	ALPHAC	4.000	BETAC	LREF	474.8100	IN.
□	14.000	ELV-IB	.000	ELV-OB	BREF	936.6800	IN.
		ELEVON	5.000	MACH	XMRP	1109.0000	IN.X0
		PHI	.000	DX	YMRP	.0000	IN.Y0
		DY	10.000	BETA0	ZMRP	375.0000	IN.Z0
					SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

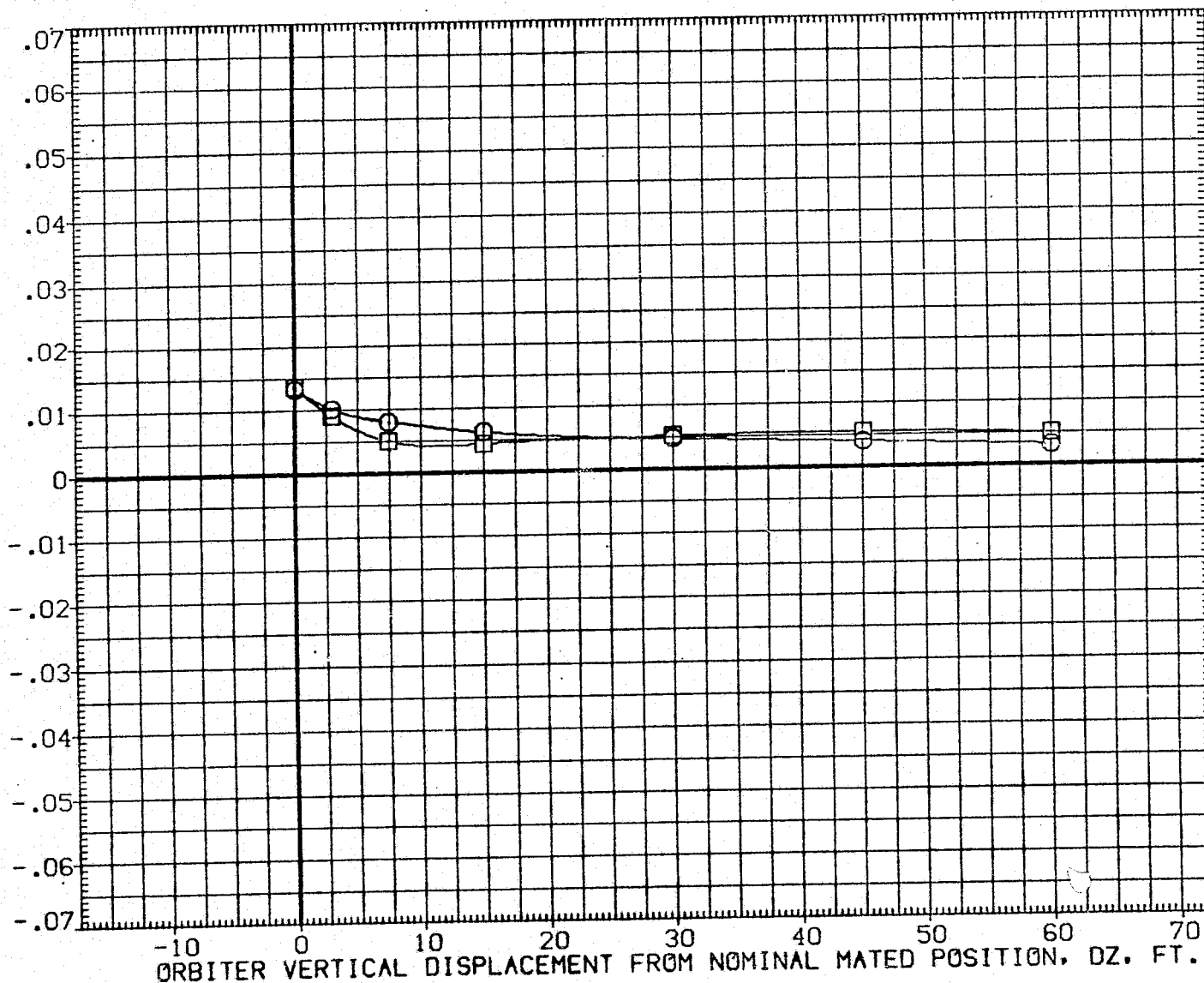


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (107 - 007)(VGN107)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

10.000

BETAC

ELV-OB

MACH

DX

BETA0

-5.000

3.000

.600

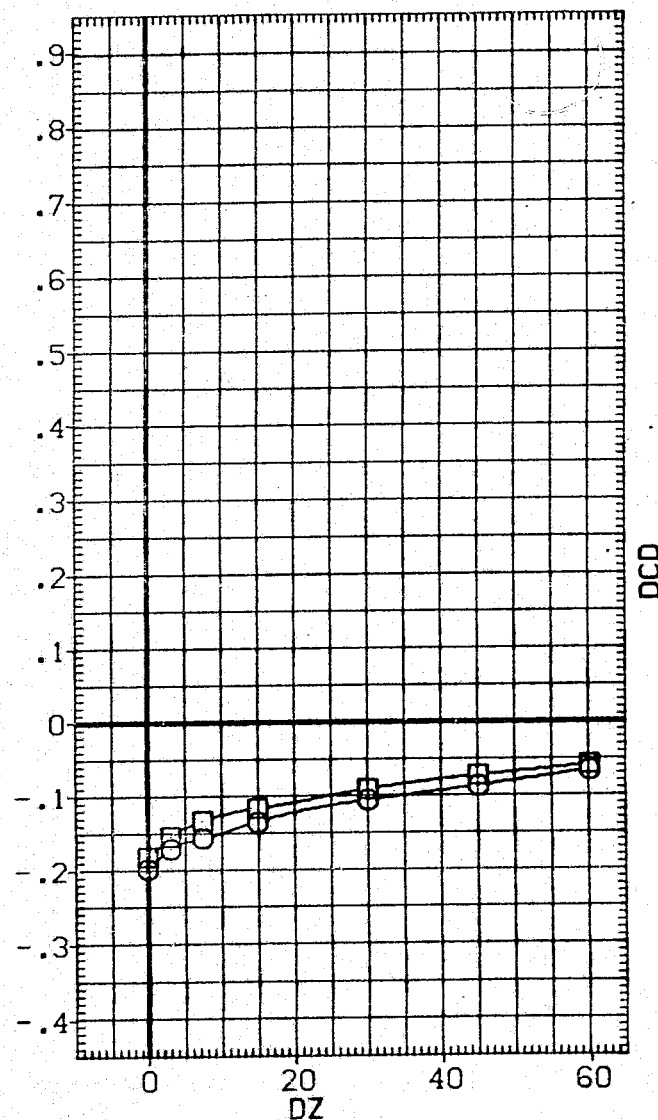
10.000

-5.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL



DCD

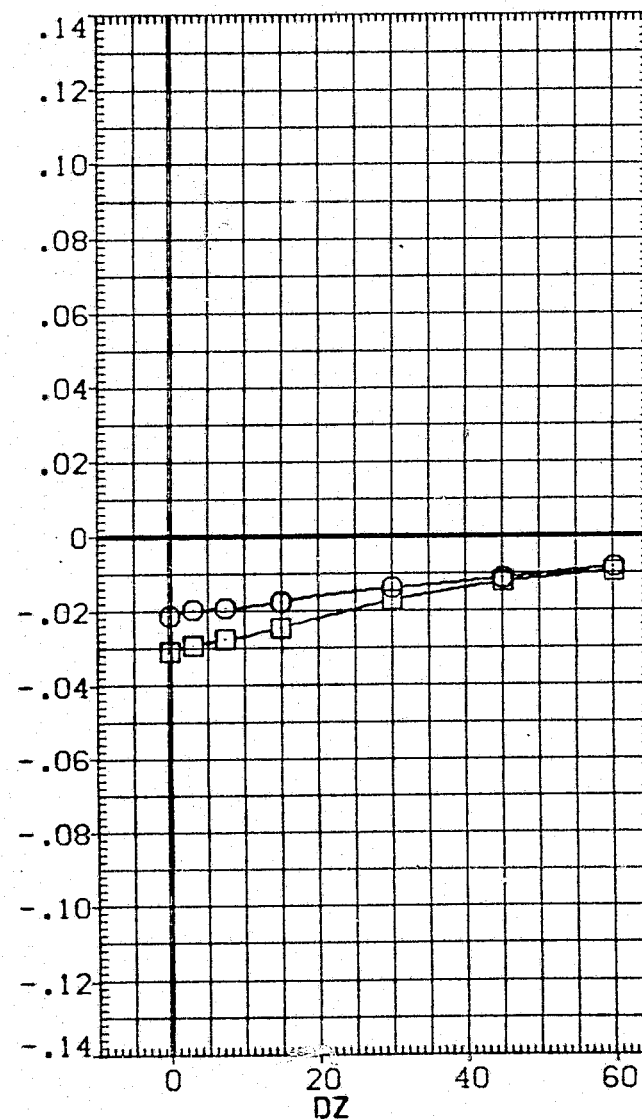


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN108)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

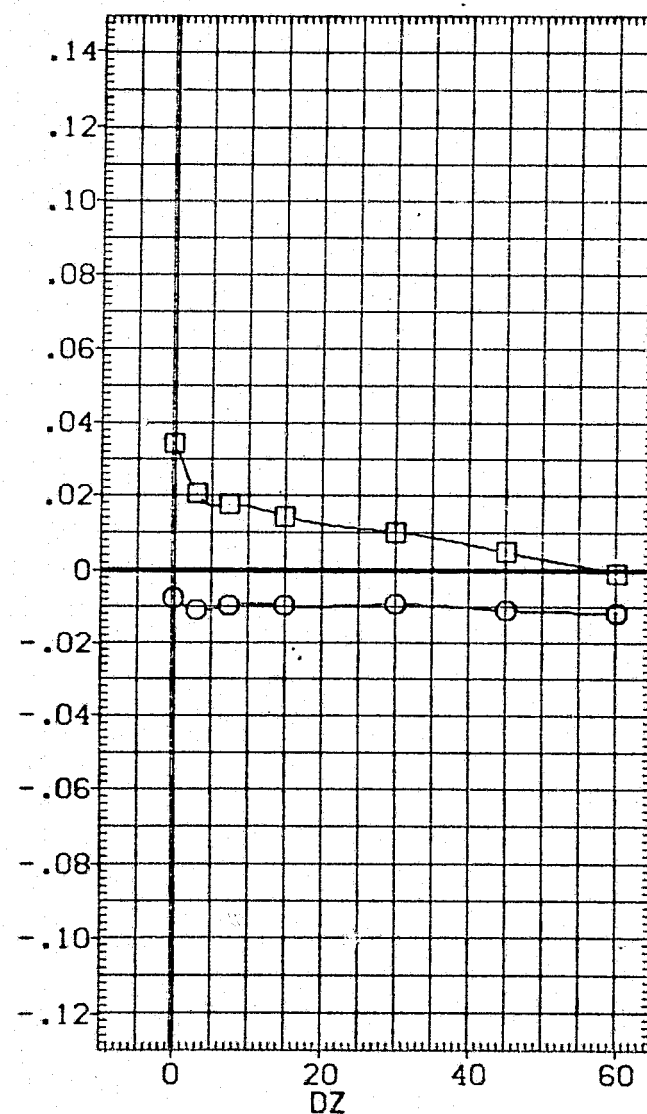
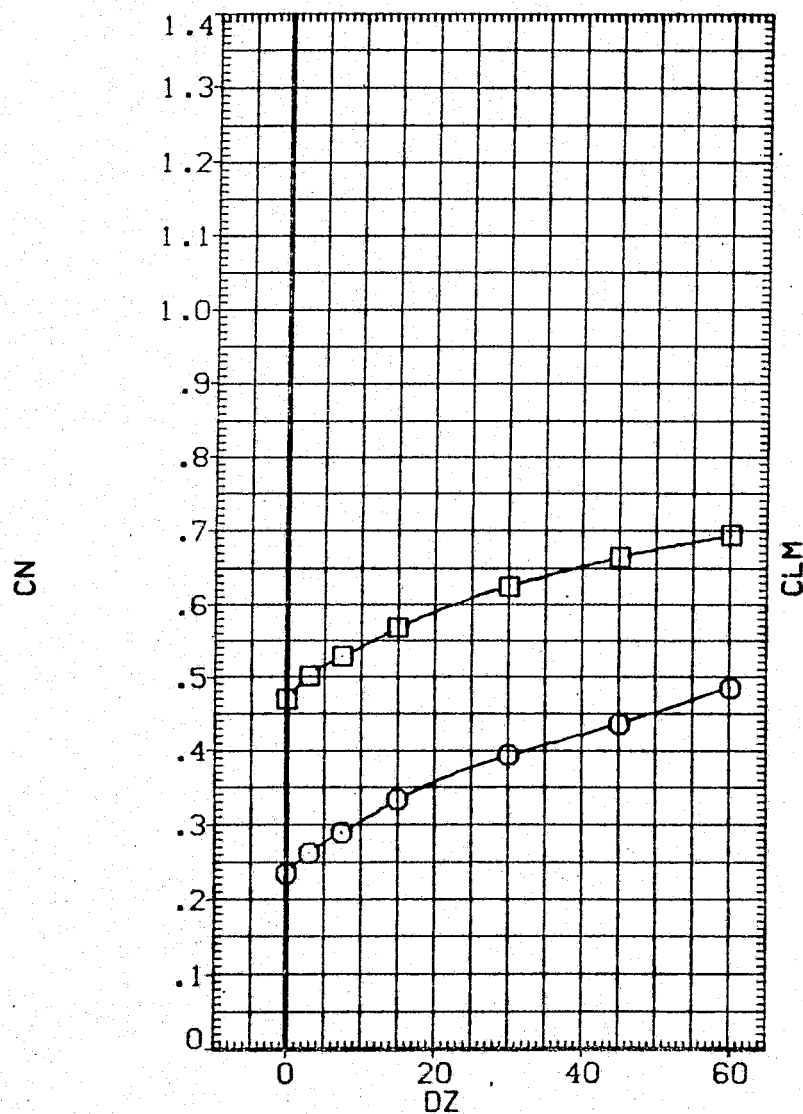


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN108)

SYMBOL

○
□

ALPHAD

10.000

ELV-1B

PARAMETRIC VALUES

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

BETA0

-5.000

BETAC

-5.000

DY

10.000

OX

10.000

ALPHAC

8.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

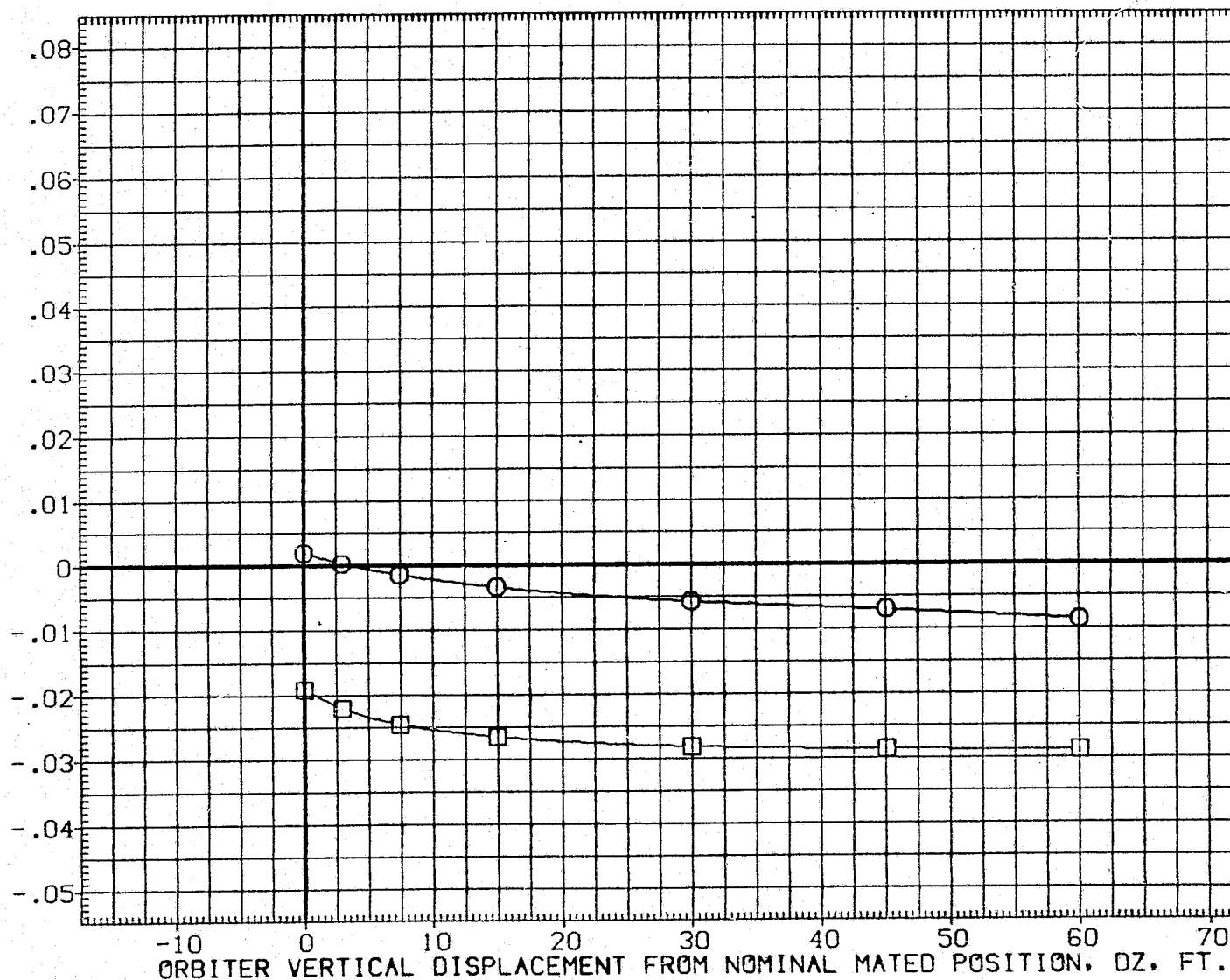


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI .000 BETA0 -5.000
		BETAC -5.000 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

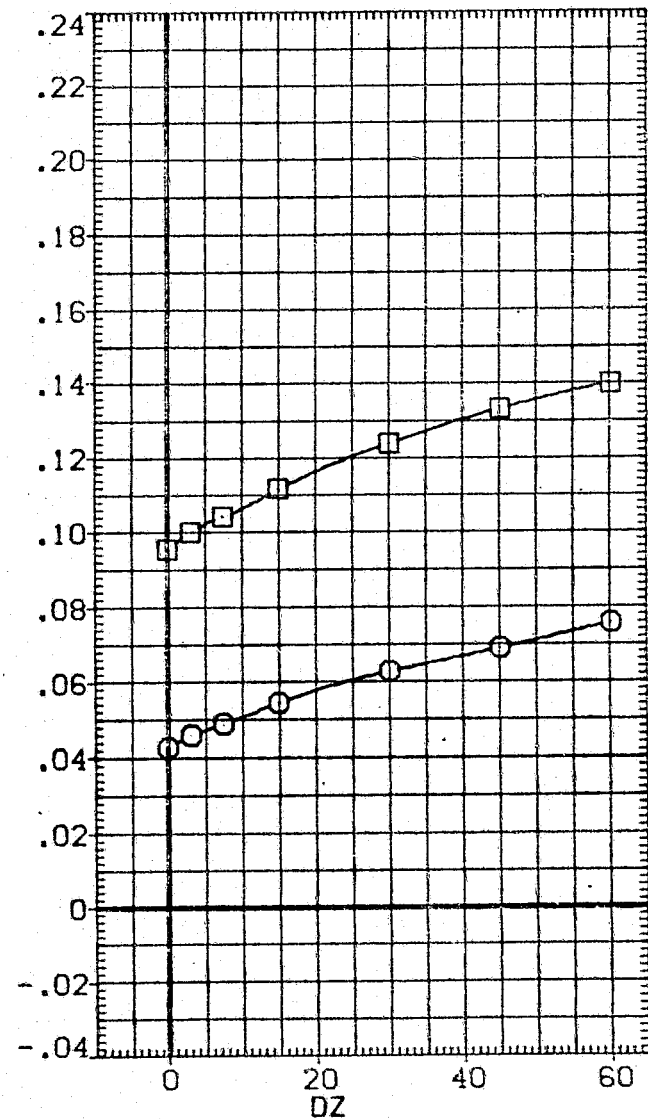
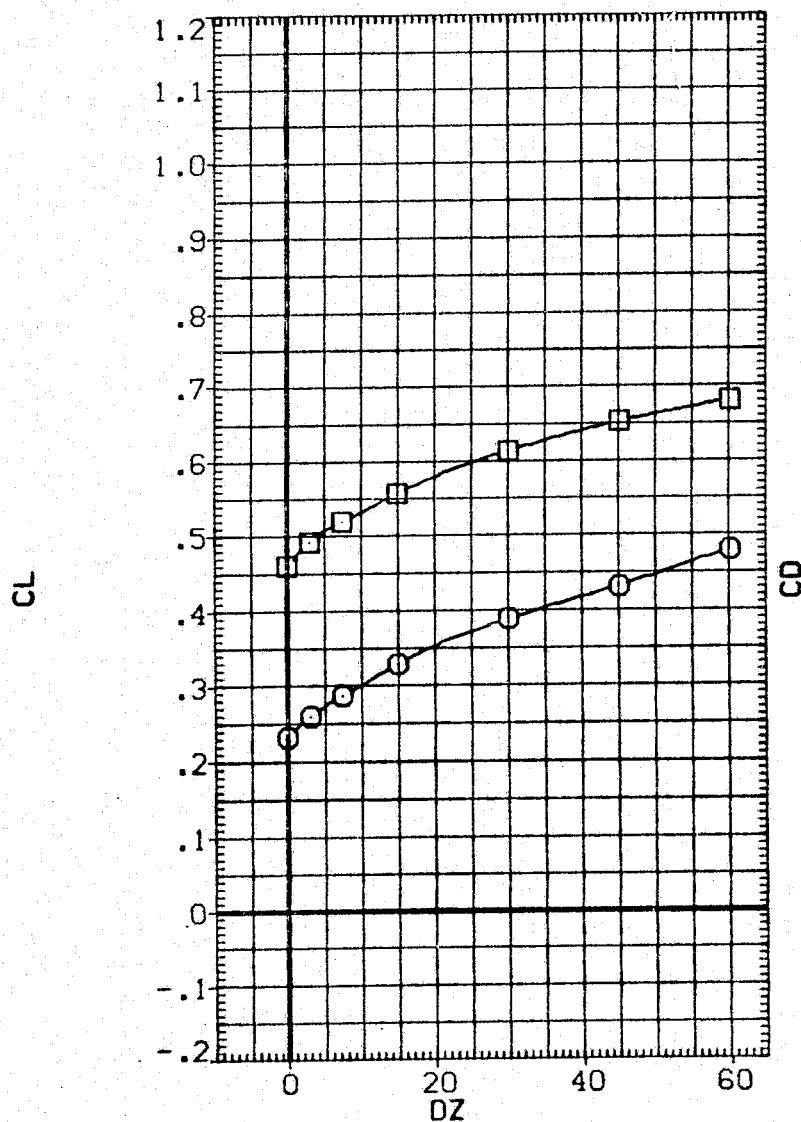


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN108)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000		3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

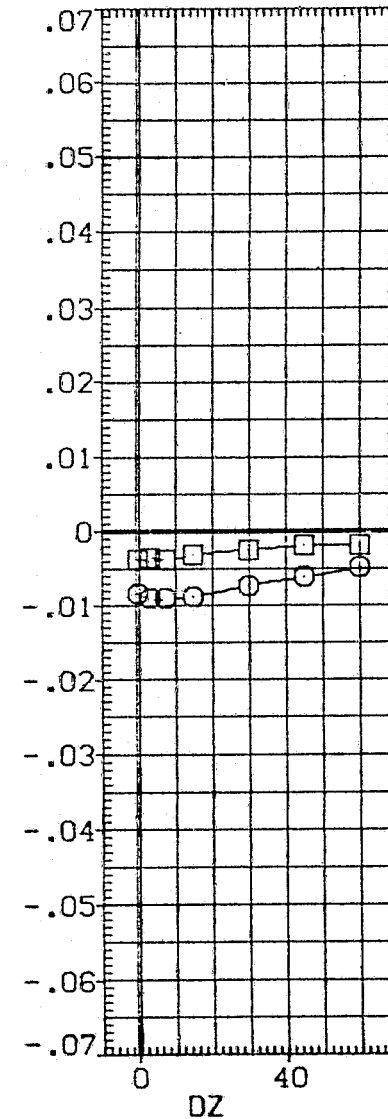
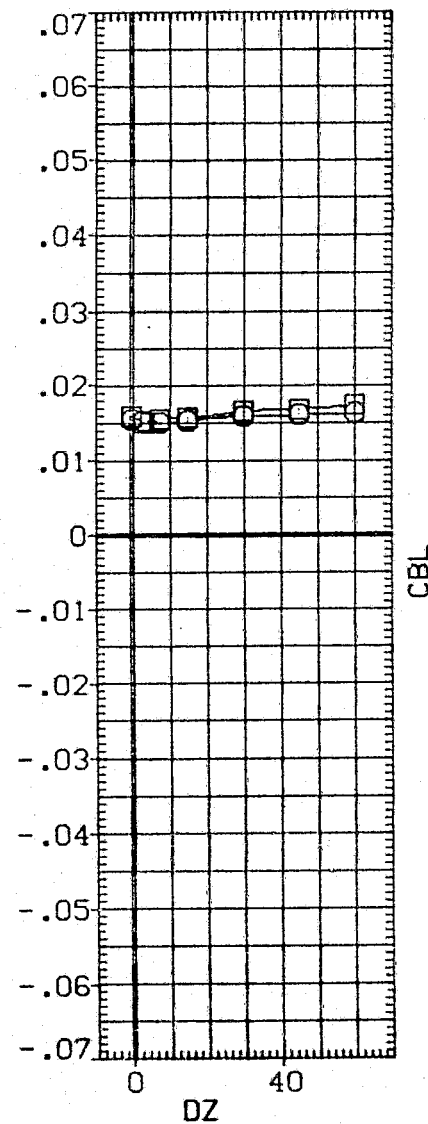
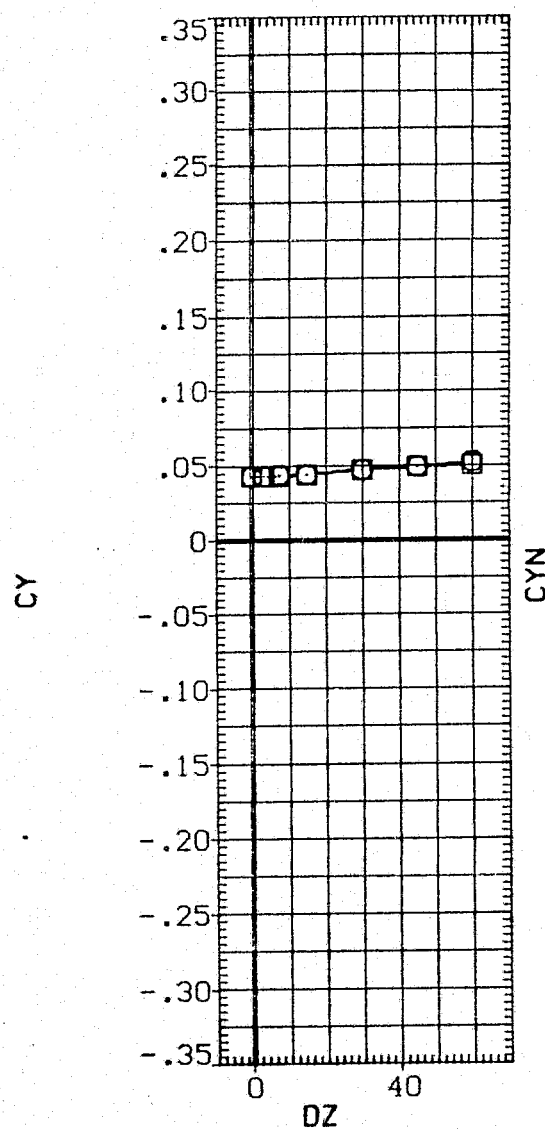


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC -5.000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY 10.000 BETAD -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

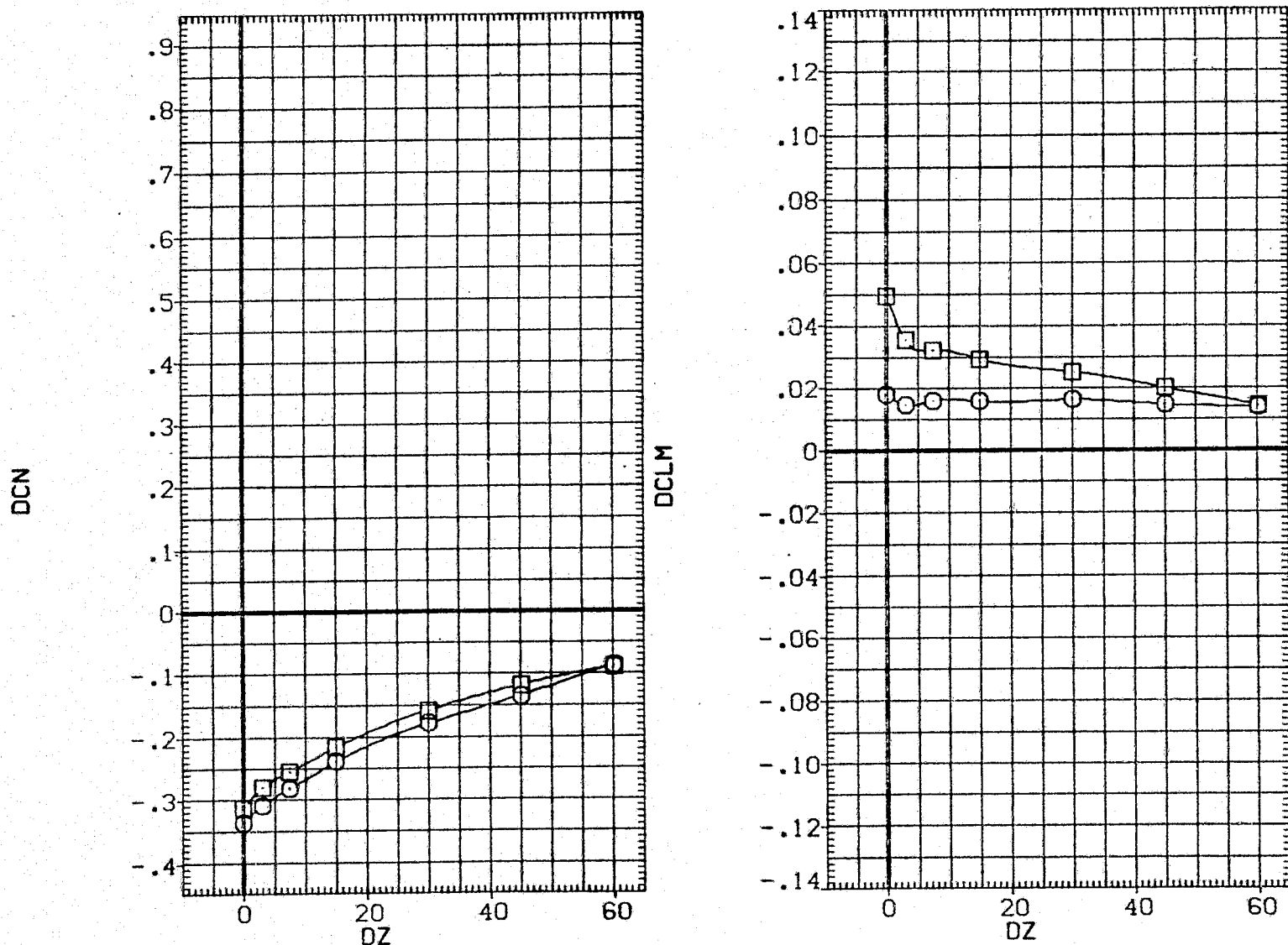


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (108 - 007)(VGN108)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000 BETAC -5.000

.000 ELV-0B 3.000

5.000 MACH .600

.000 OX 10.000

10.000 BETAD -5.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

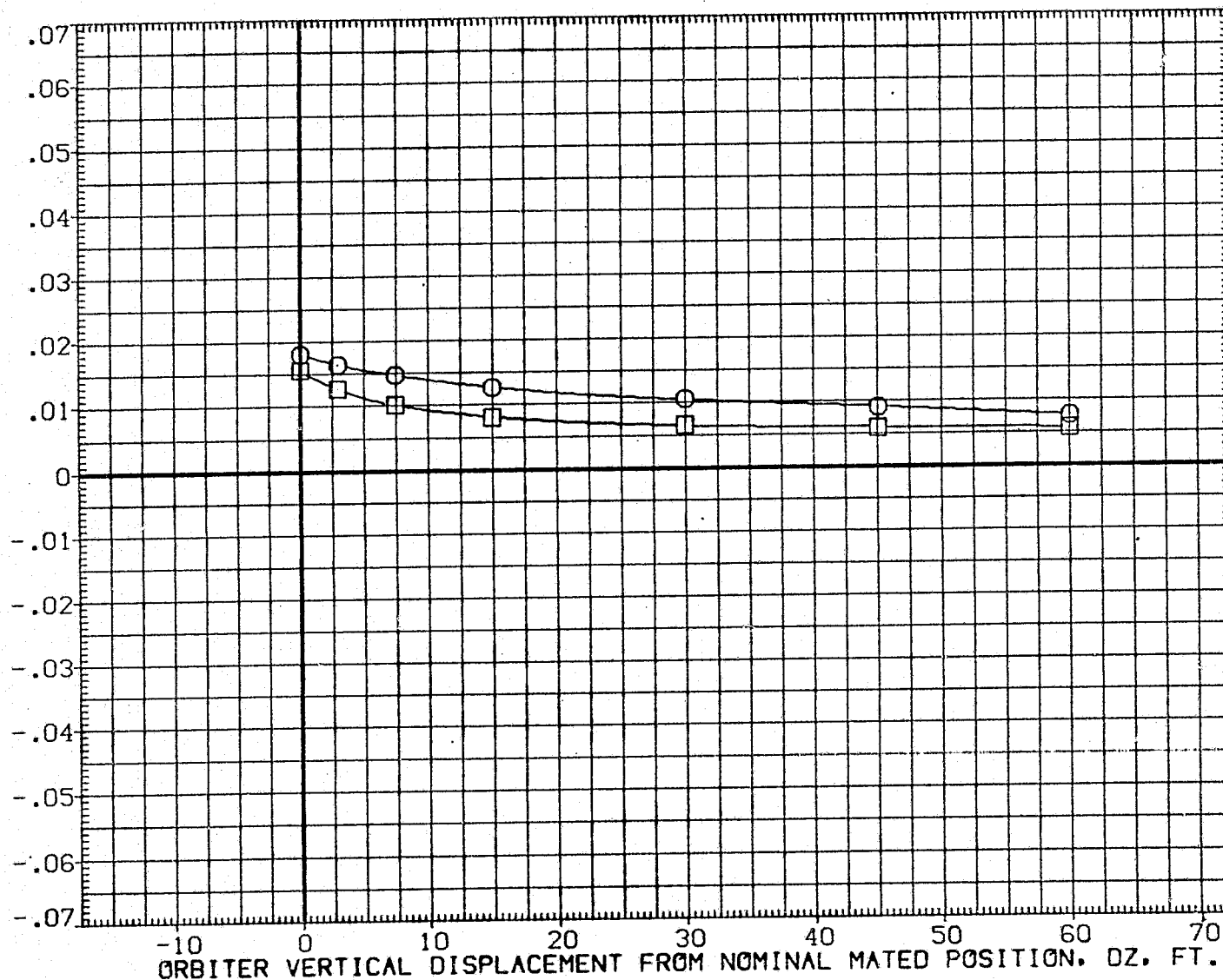


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

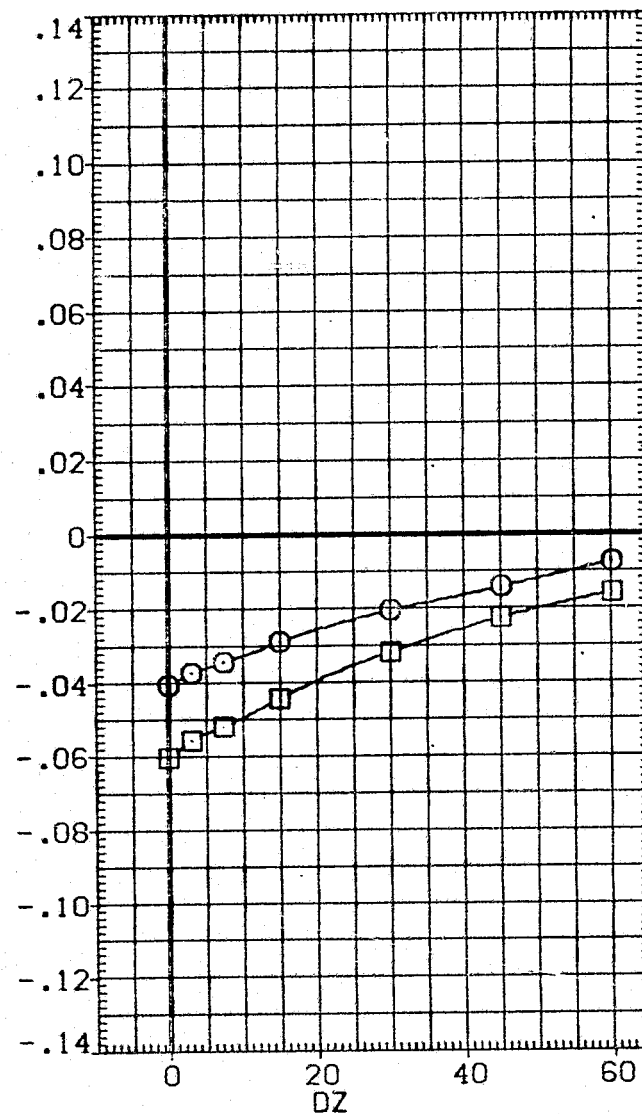
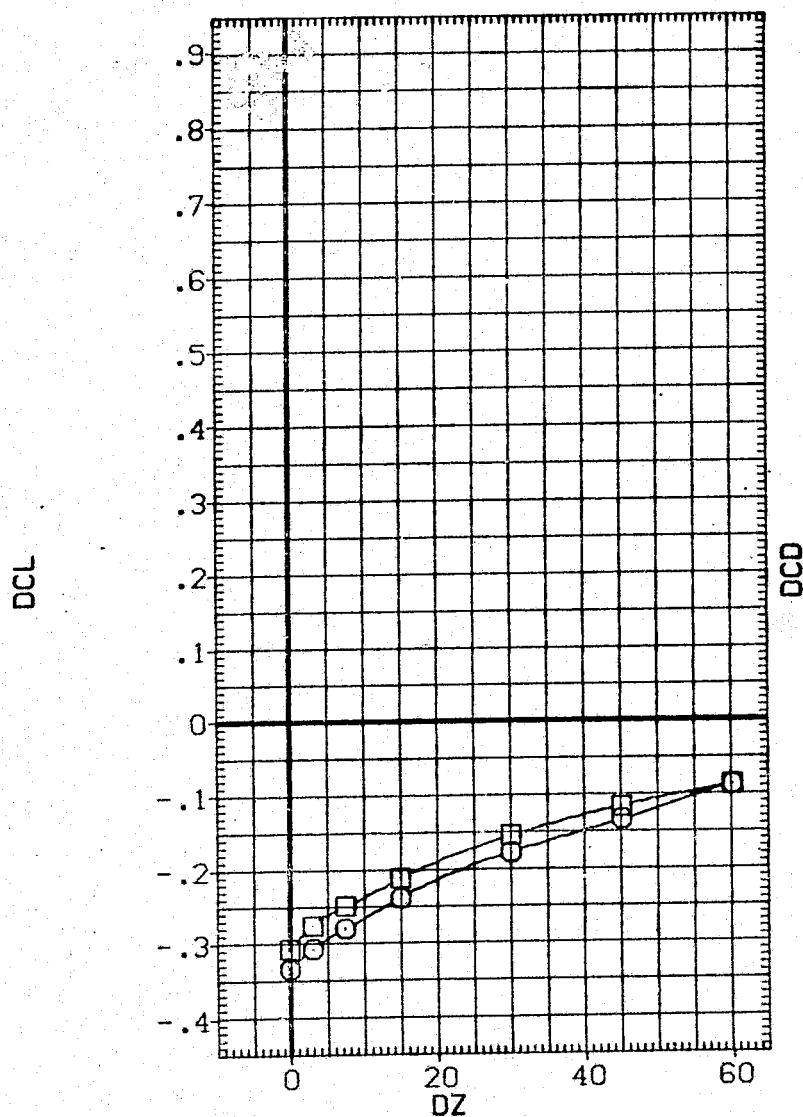


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)



CA20 747/1 01 S1

ORBITER DATA (NGN109)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	ELV-IB	.000	ELV-OB	3.000	
○	14.000	ELEVON	5.000	MACH	.600	
□		PHI	.000	BETA0	-5.000	
		BETAC	.000	OY	.000	
		DX	10.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

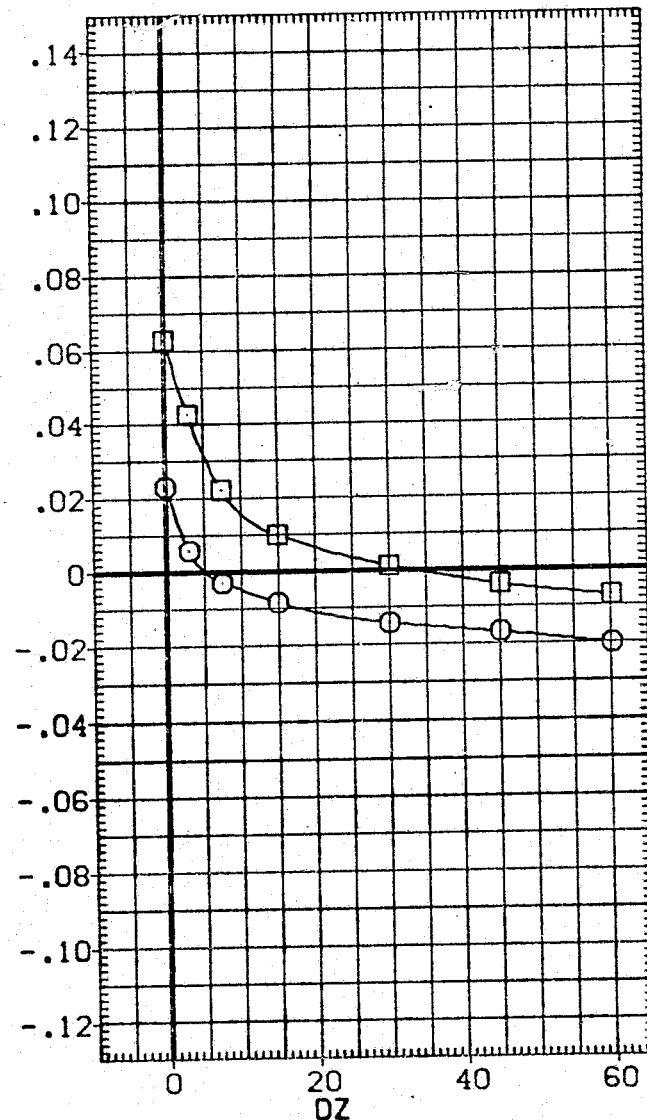
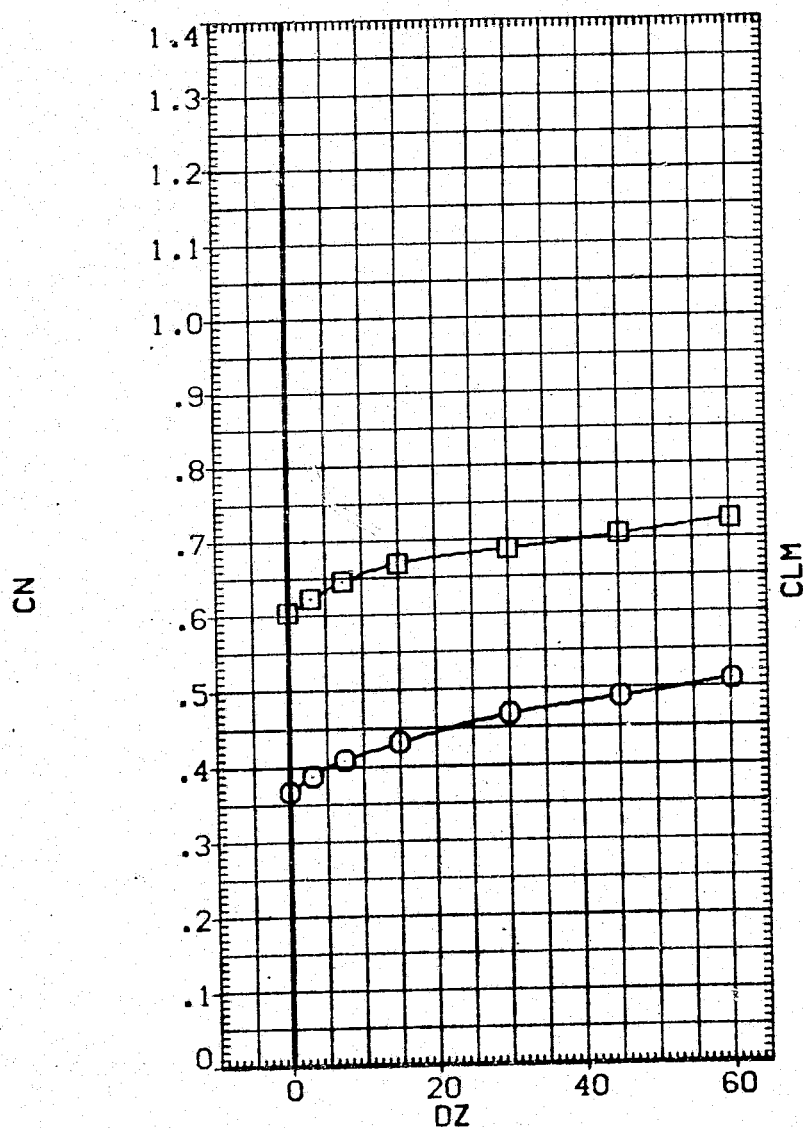


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

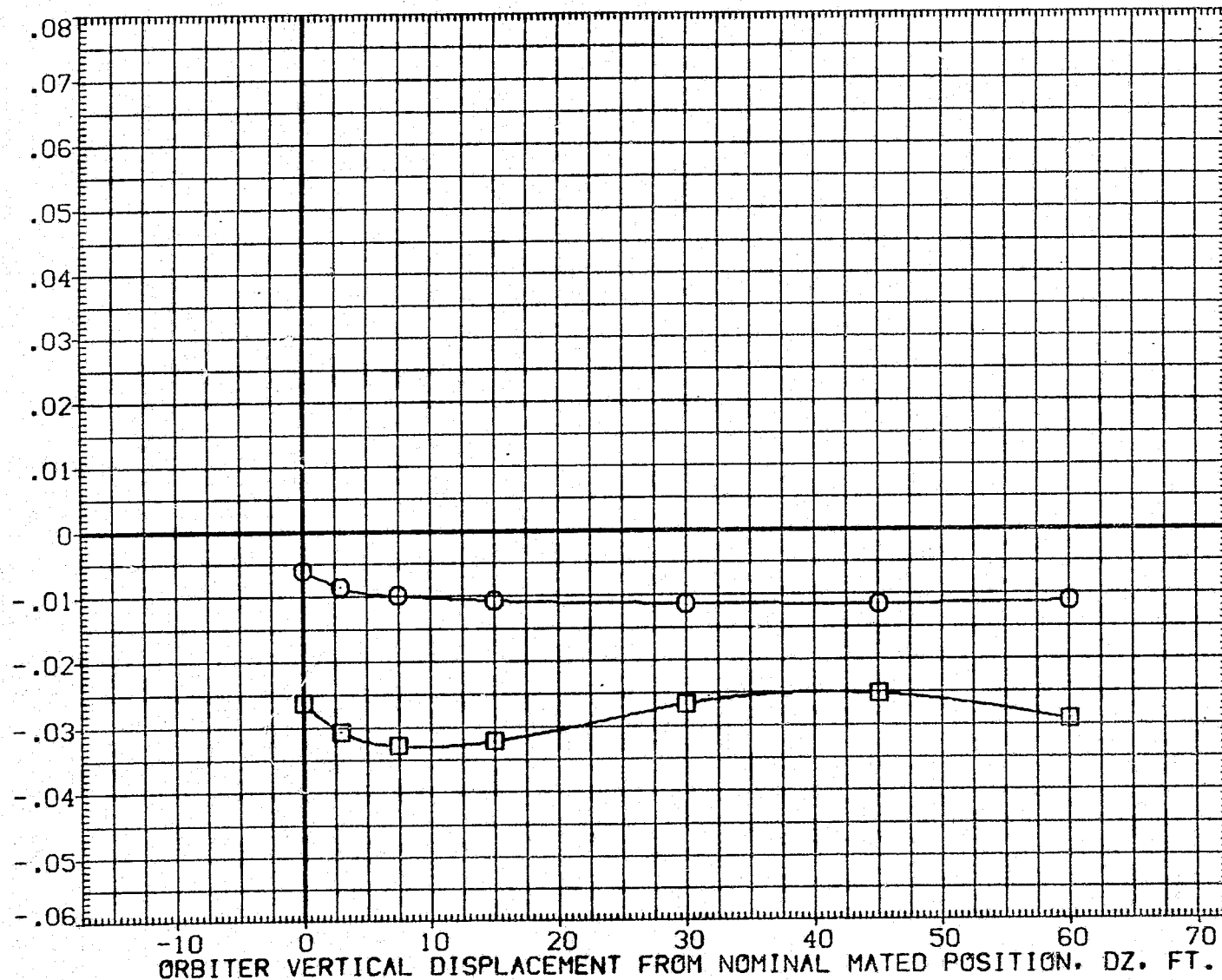


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN109)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-18

ELEVON

PHI

BETAC

DX

PARAMETRIC VALUES

.000

5.000

.000

.000

10.000

ELV-08

MACH

BETA0

DY

ALPHAC

3.000

.600

-5.000

.000

4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

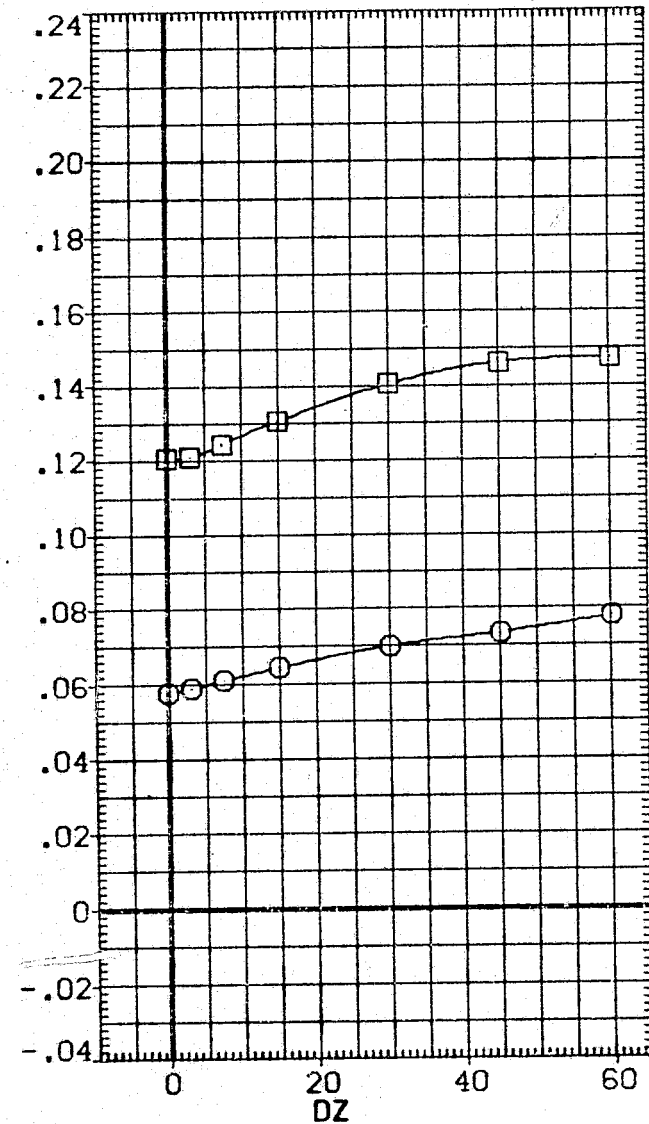
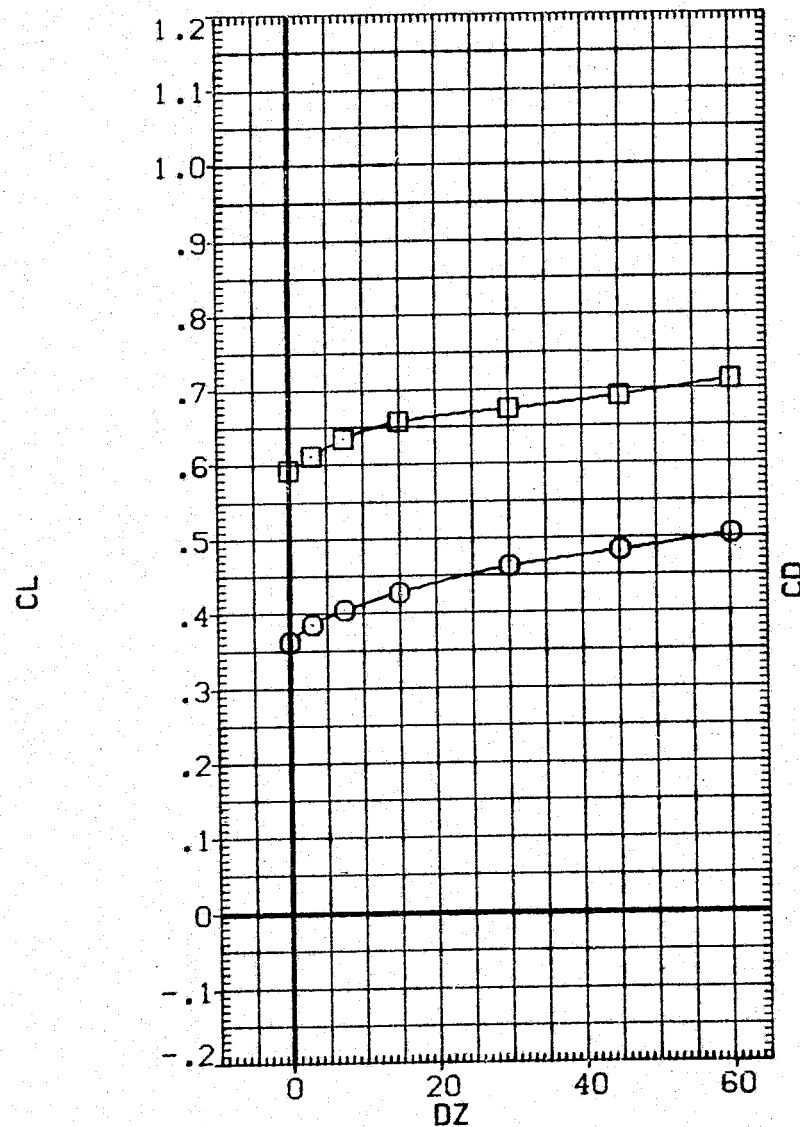


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN109)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB
○	10.000	.000		3.000
□	14.000	5.000		.600
		PHI	.000	BETA0
		BETAC	.000	DY
		DX	10.000	ALPHAC
				4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

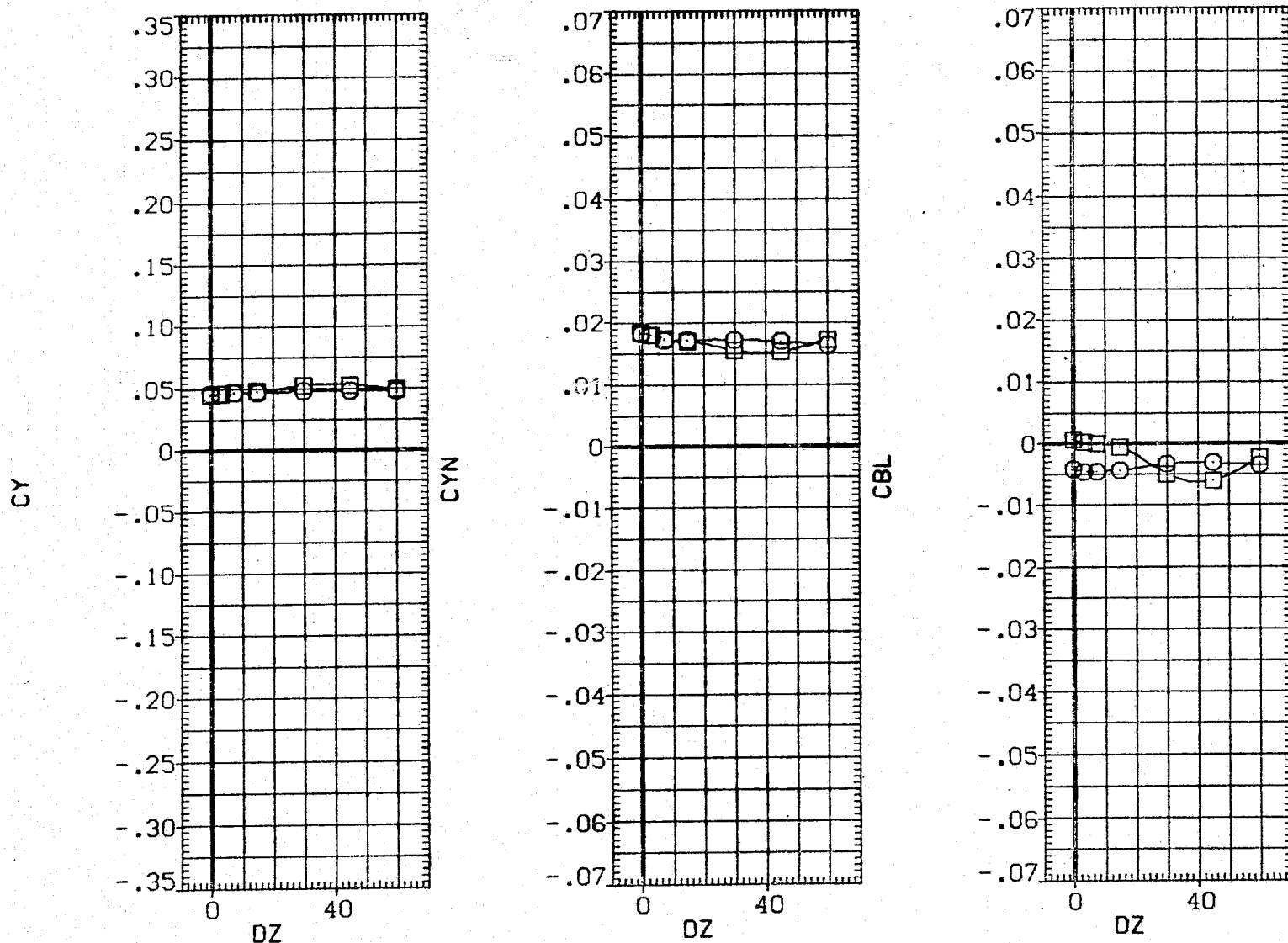


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (109 - 007) (VGN109)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 -5.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

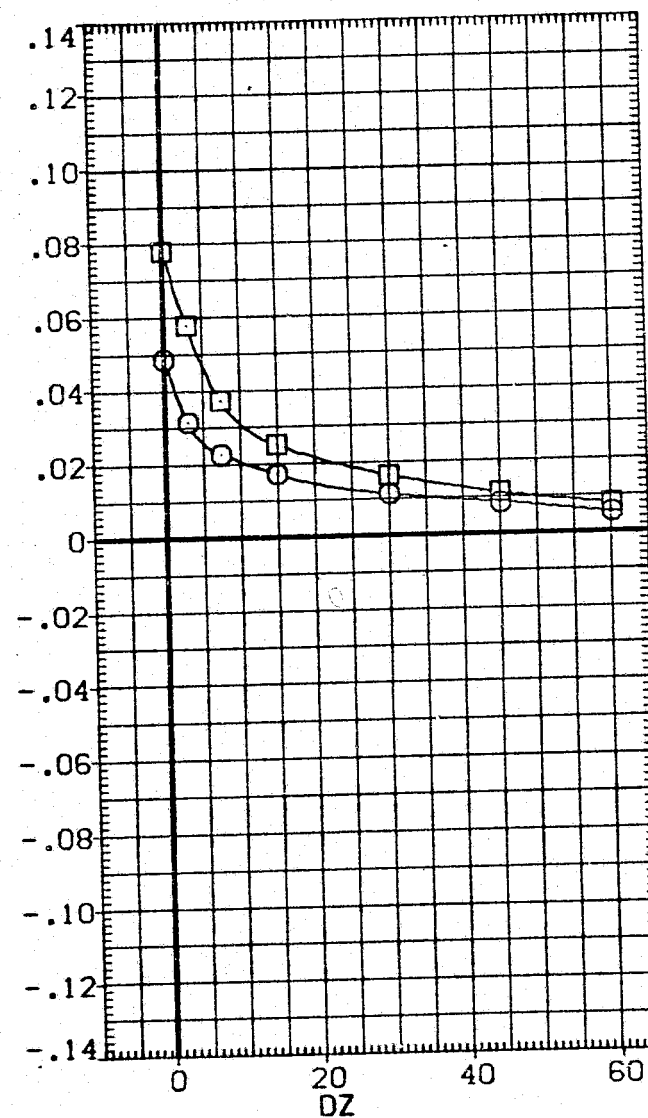
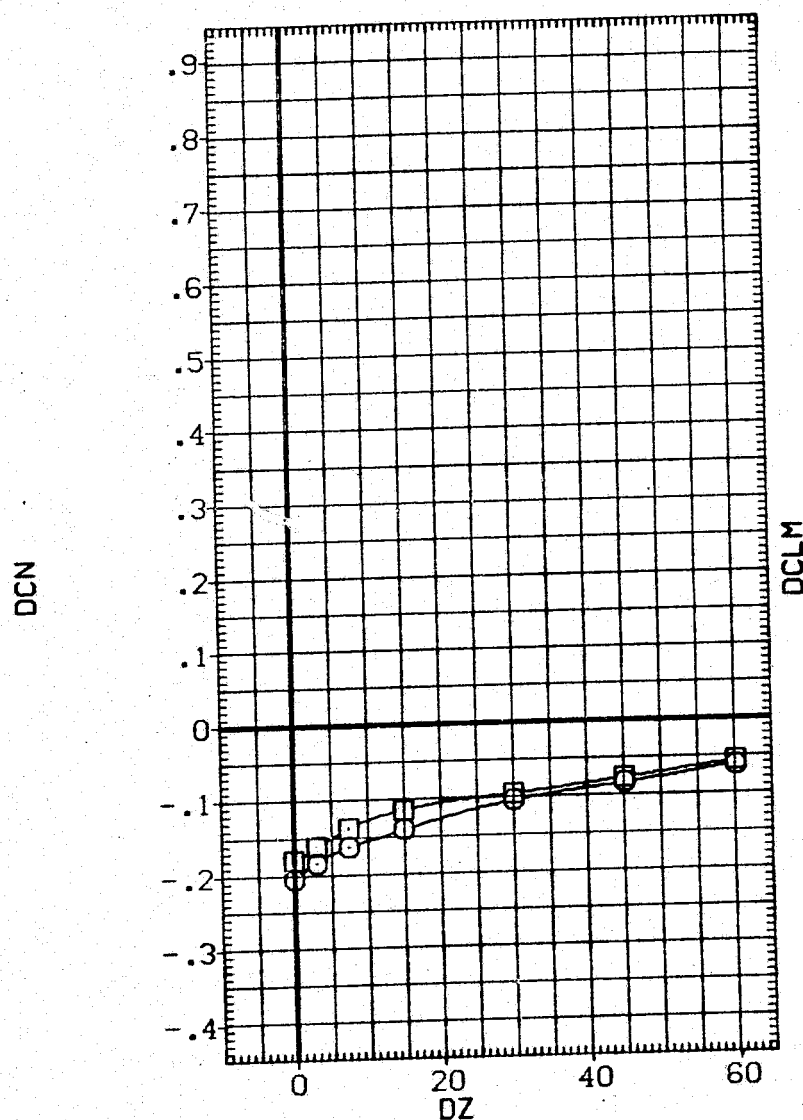


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

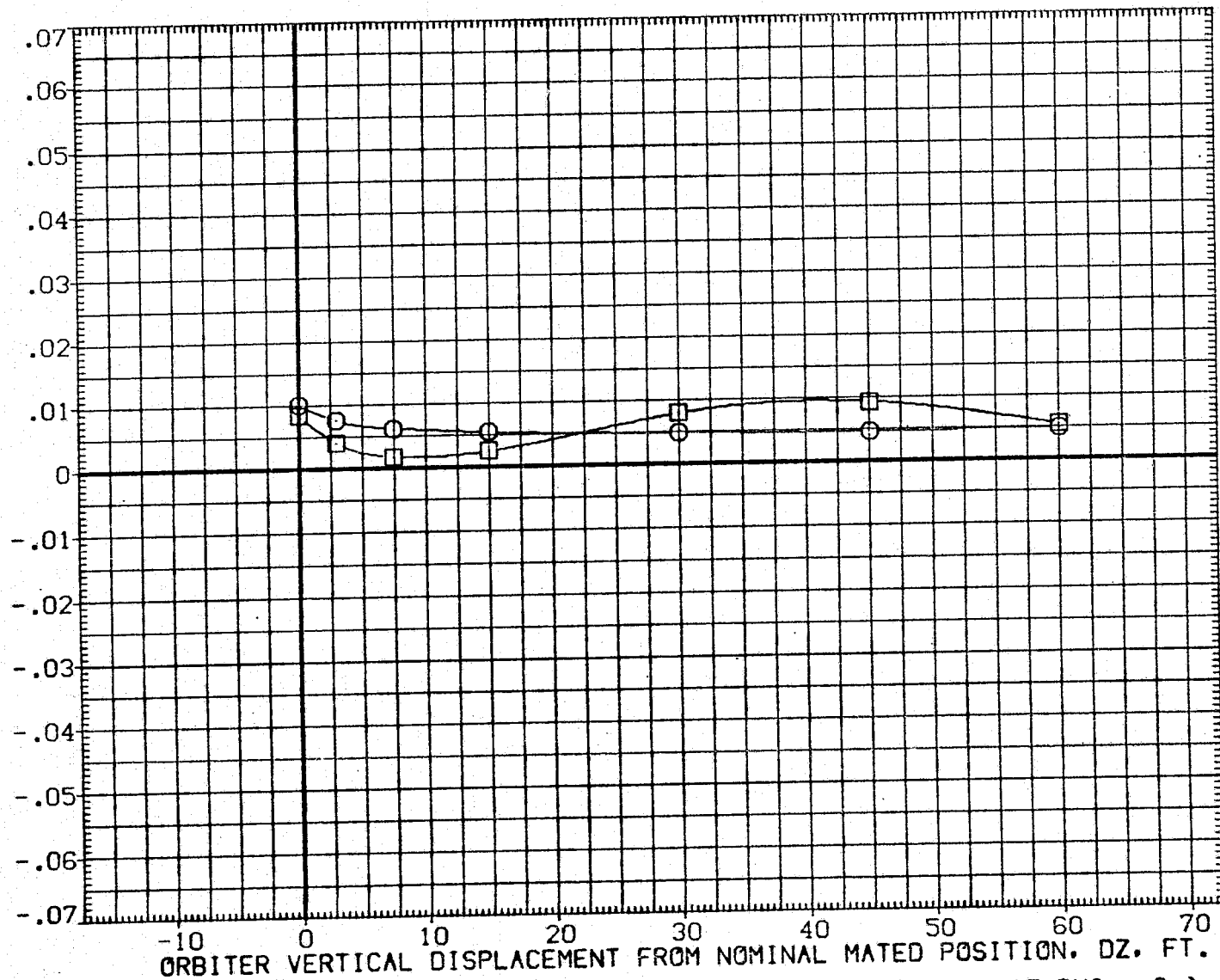


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (109 - 007) (VGN109)

SYMBOL
 ○
 □

ALPHA0
 10.000
 14.000

ALPHAC
 ELV-IB
 ELEVON
 PHI
 DY

PARAMETRIC VALUES

4.000 BETAC .000
 .000 ELV-OB 3.000
 5.000 MACH .600
 .000 DX 10.000
 .000 BETA0 -5.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
 LREF 474.8100 IN.
 BREF 936.6800 IN.
 XMRP 1109.0000 IN.X0
 YMRP .0000 IN.Y0
 ZMRP 375.0000 IN.Z0
 SCALE .0300

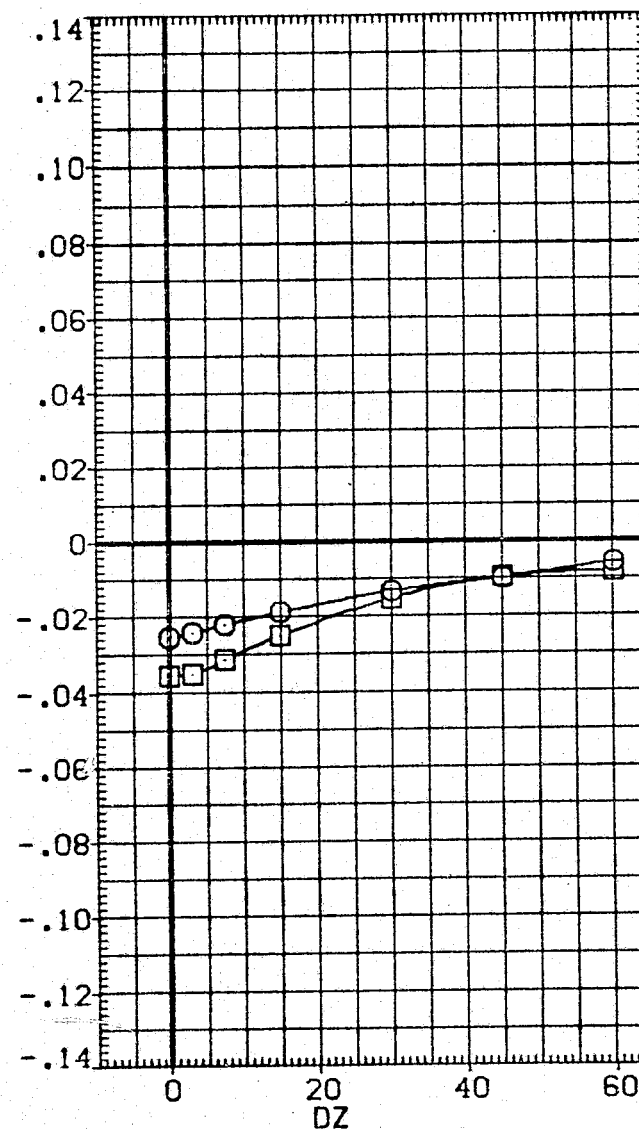
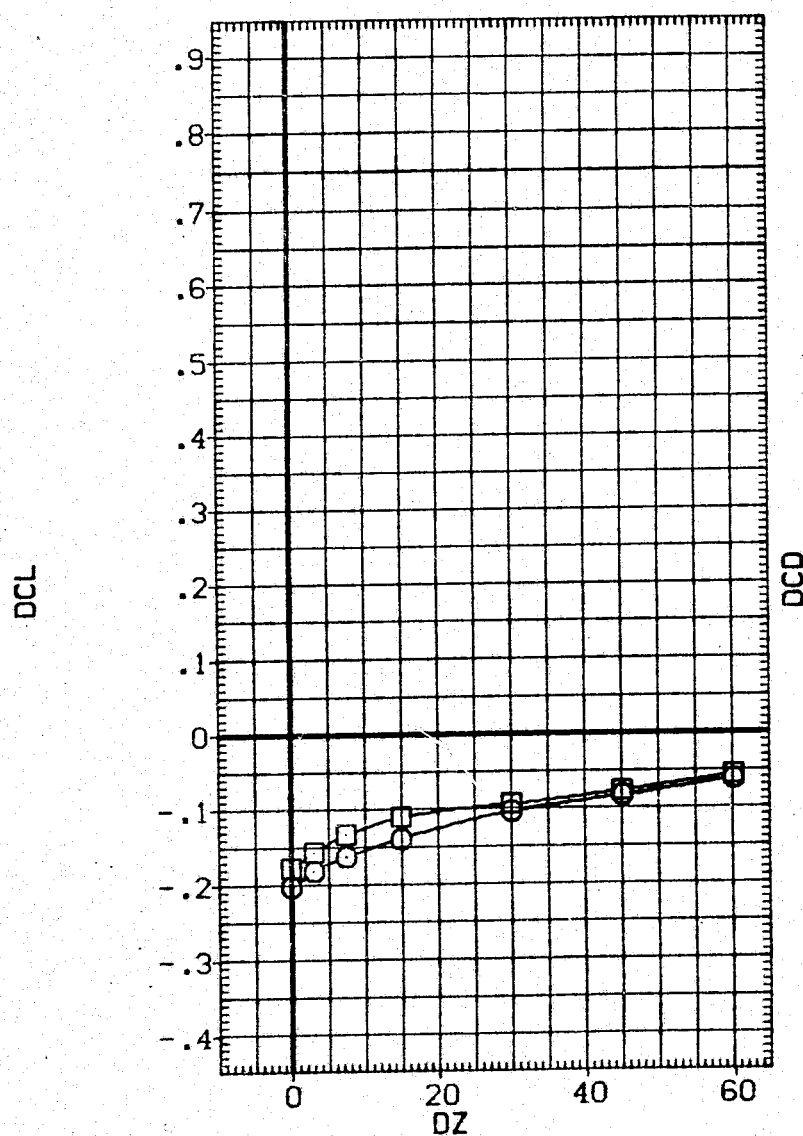


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	.000	GY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

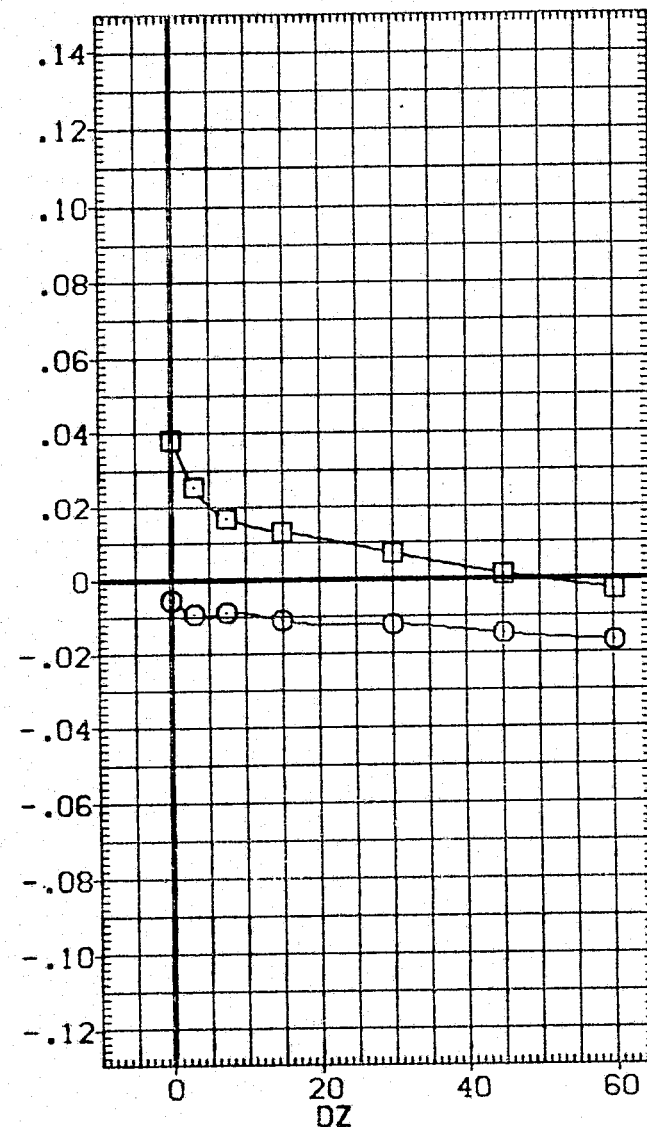
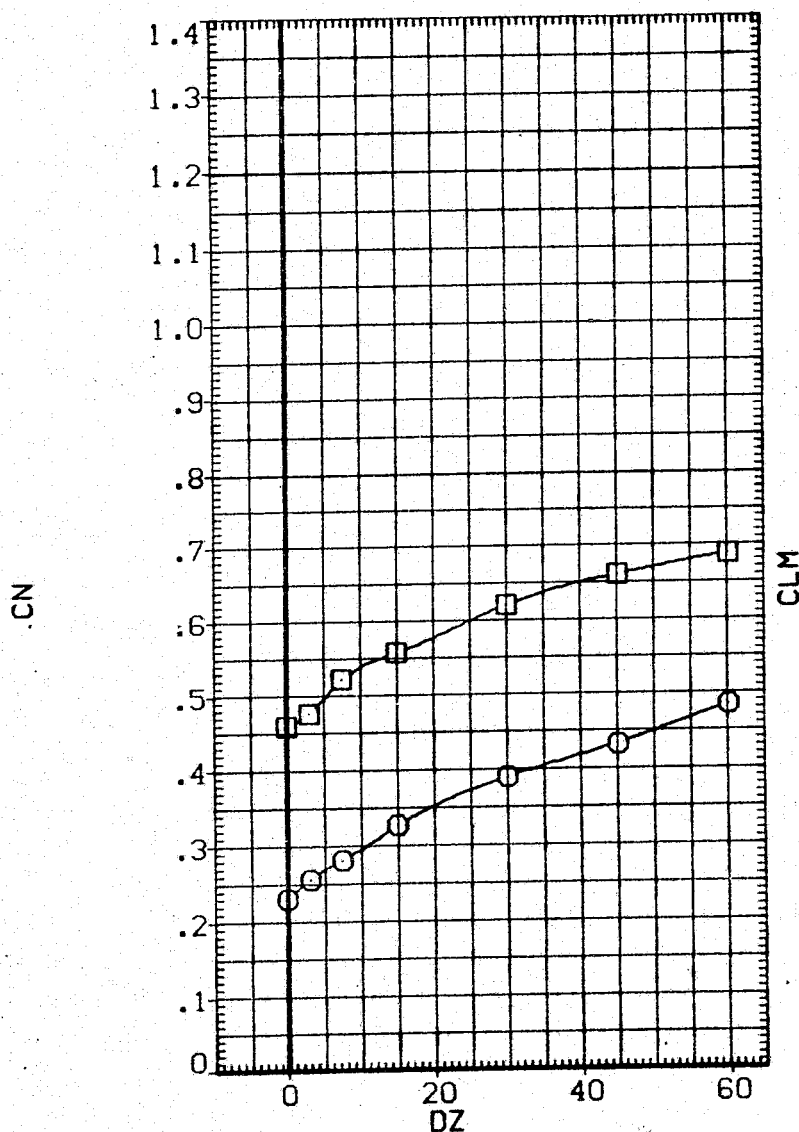


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN110)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

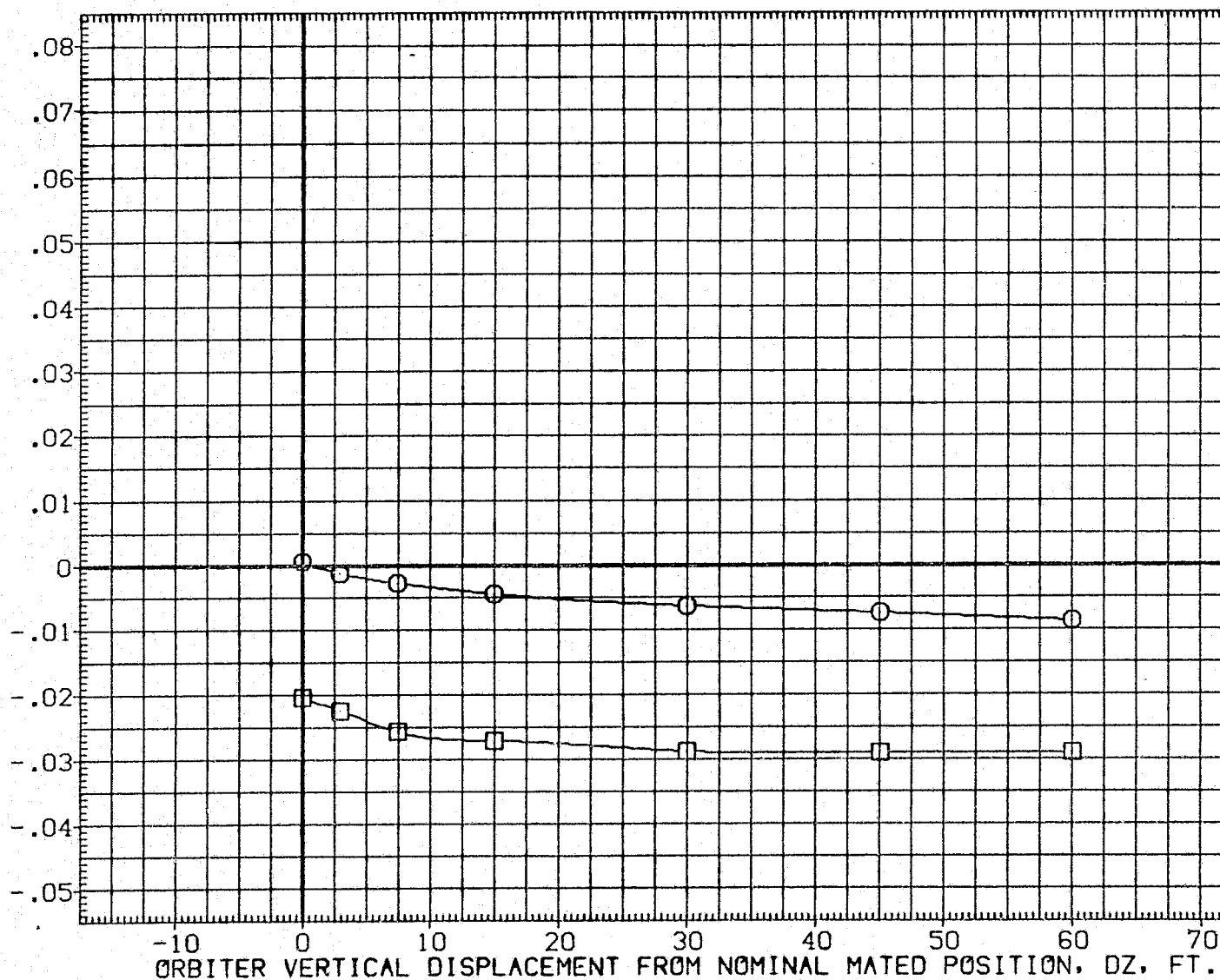


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN110)

SYMBOL



ALPHA0

10.000

14.000

ELV-1B

ELEVON

PHI

BETAC

DX

PARAMETRIC VALUES

.000 ELV-0B

5.000 MACH

.000 BETA0

.000 DY

10.000 ALPHAC

3.000

.600

-5.000

.000

8.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

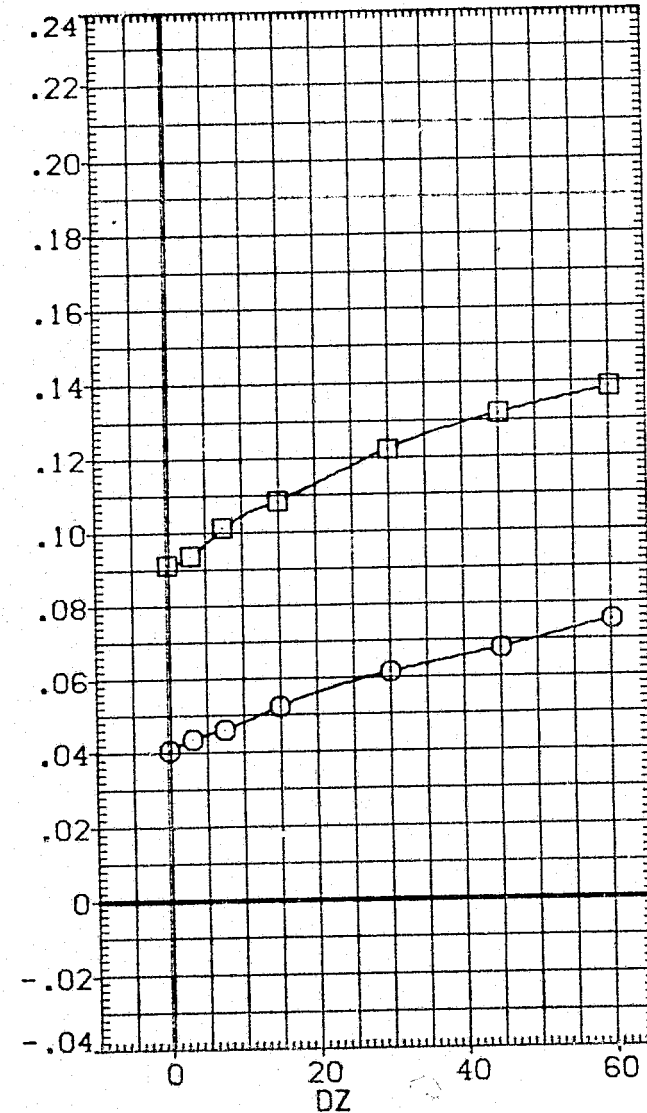
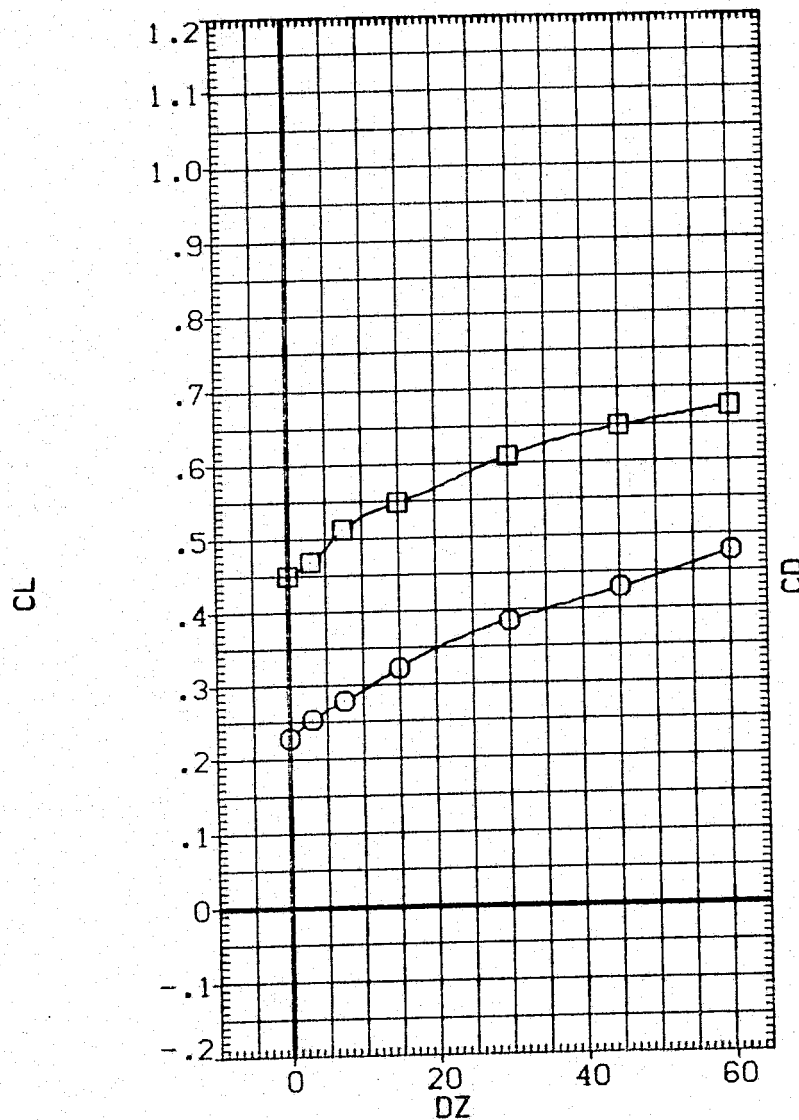


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN110)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

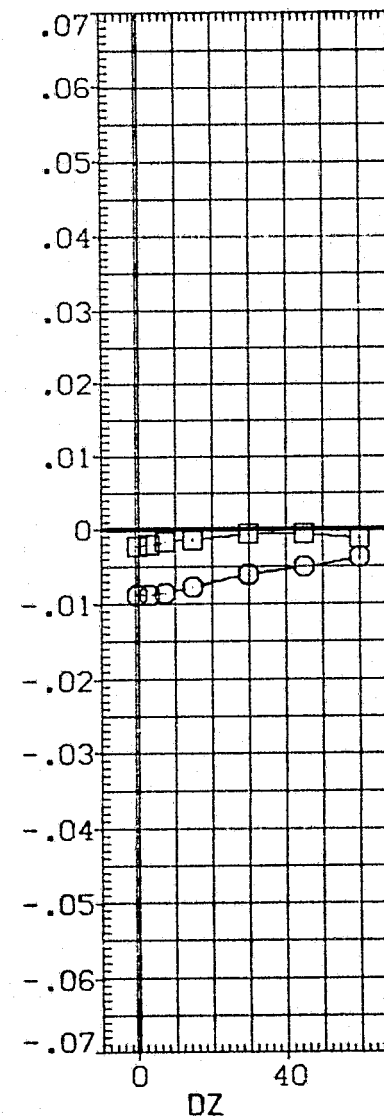
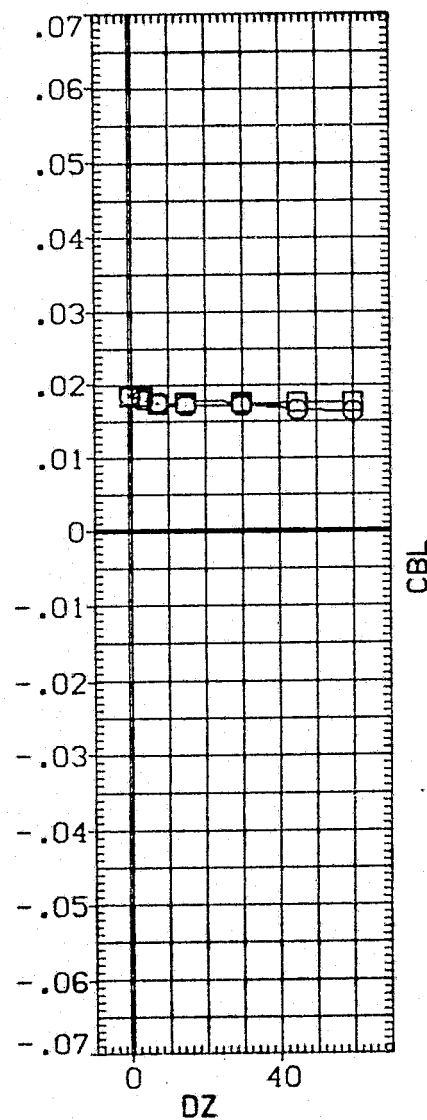
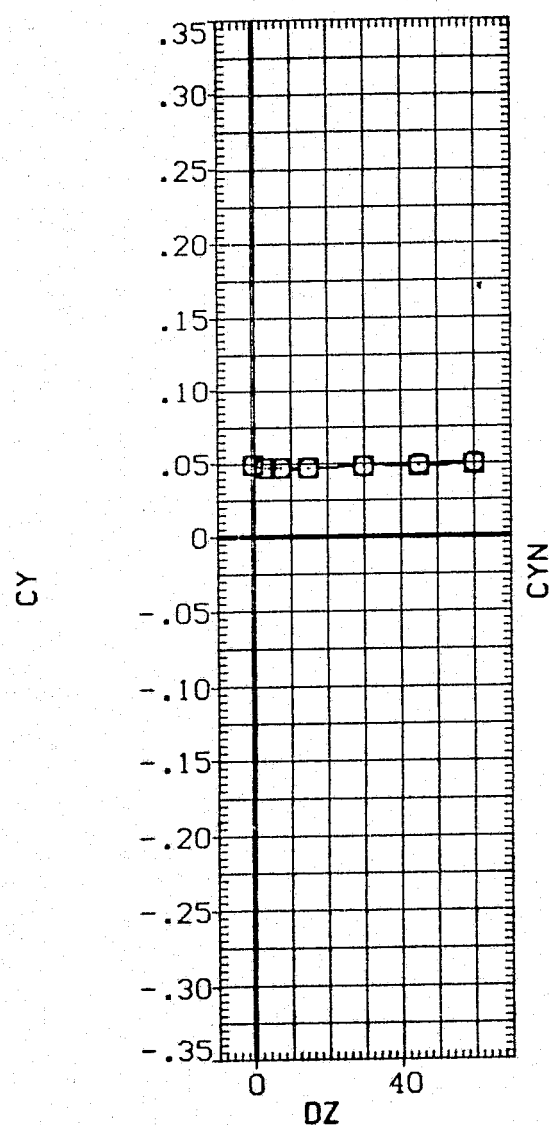


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0
10.000
14.000

ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000 BETAC .000
.000 ELV-OB 3.000
5.000 MACH .600
.000 DX 10.000
.000 BETA0 -5.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.5800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

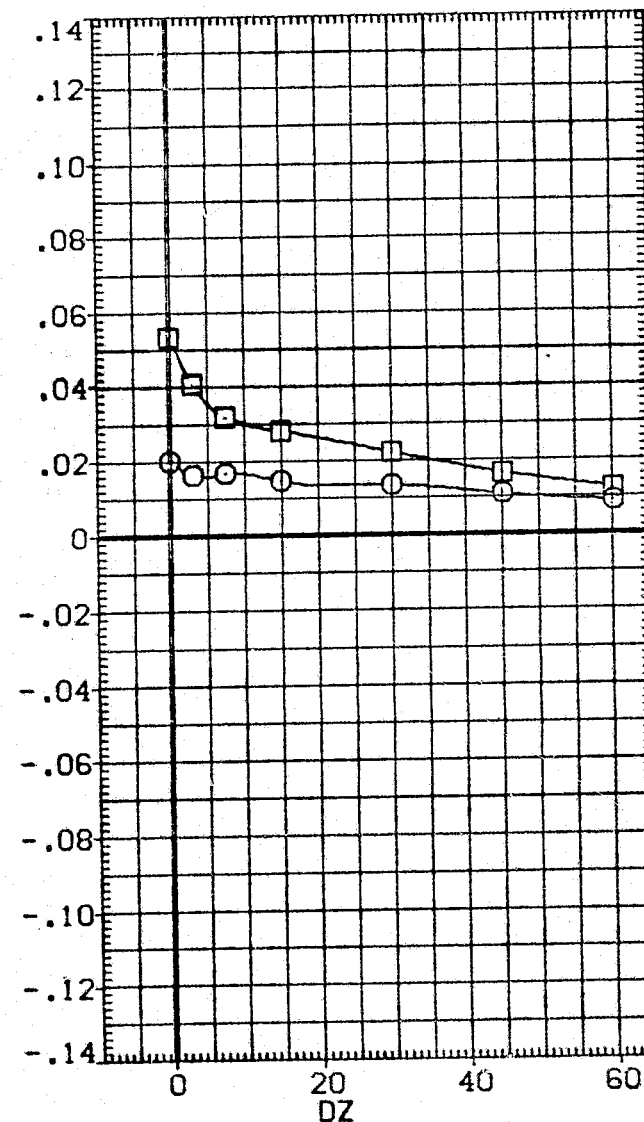
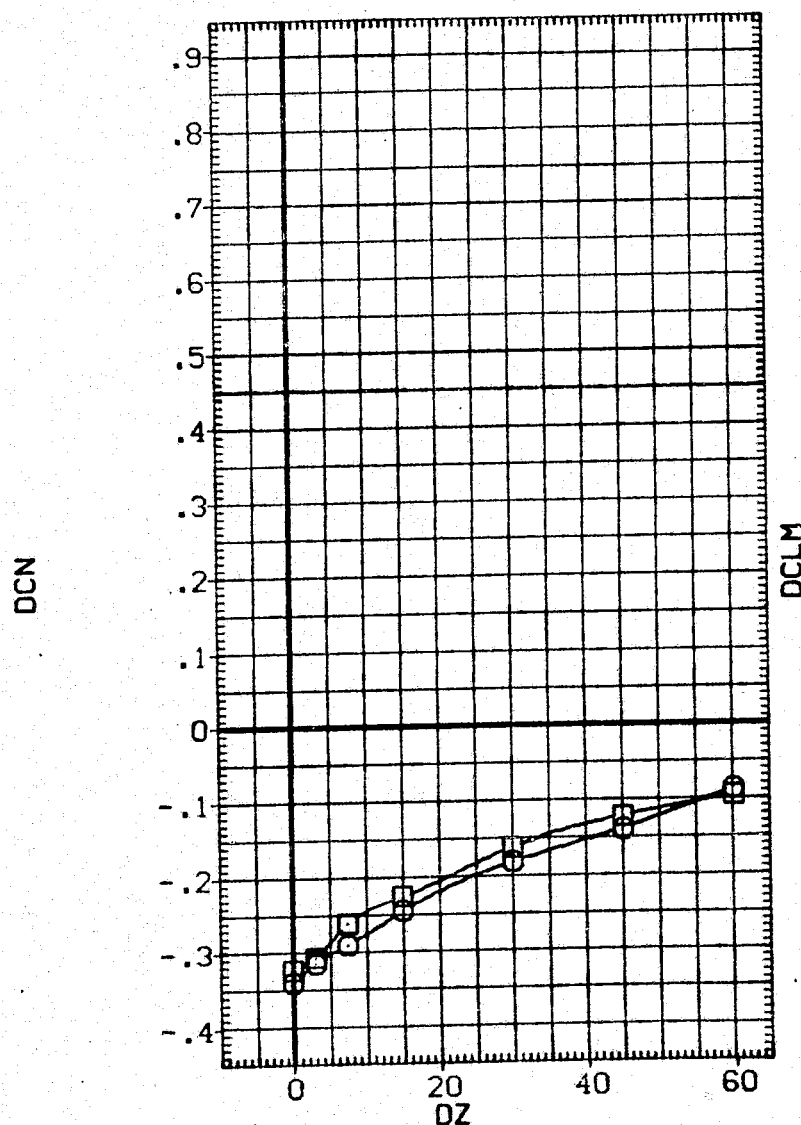


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (110 - 007) (VGN110)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

OY

PARAMETRIC VALUES

8.000 BETAC .000

.000 ELV-OB 3.000

5.000 MACH .600

.000 DX 10.000

.000 BETA0 -5.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

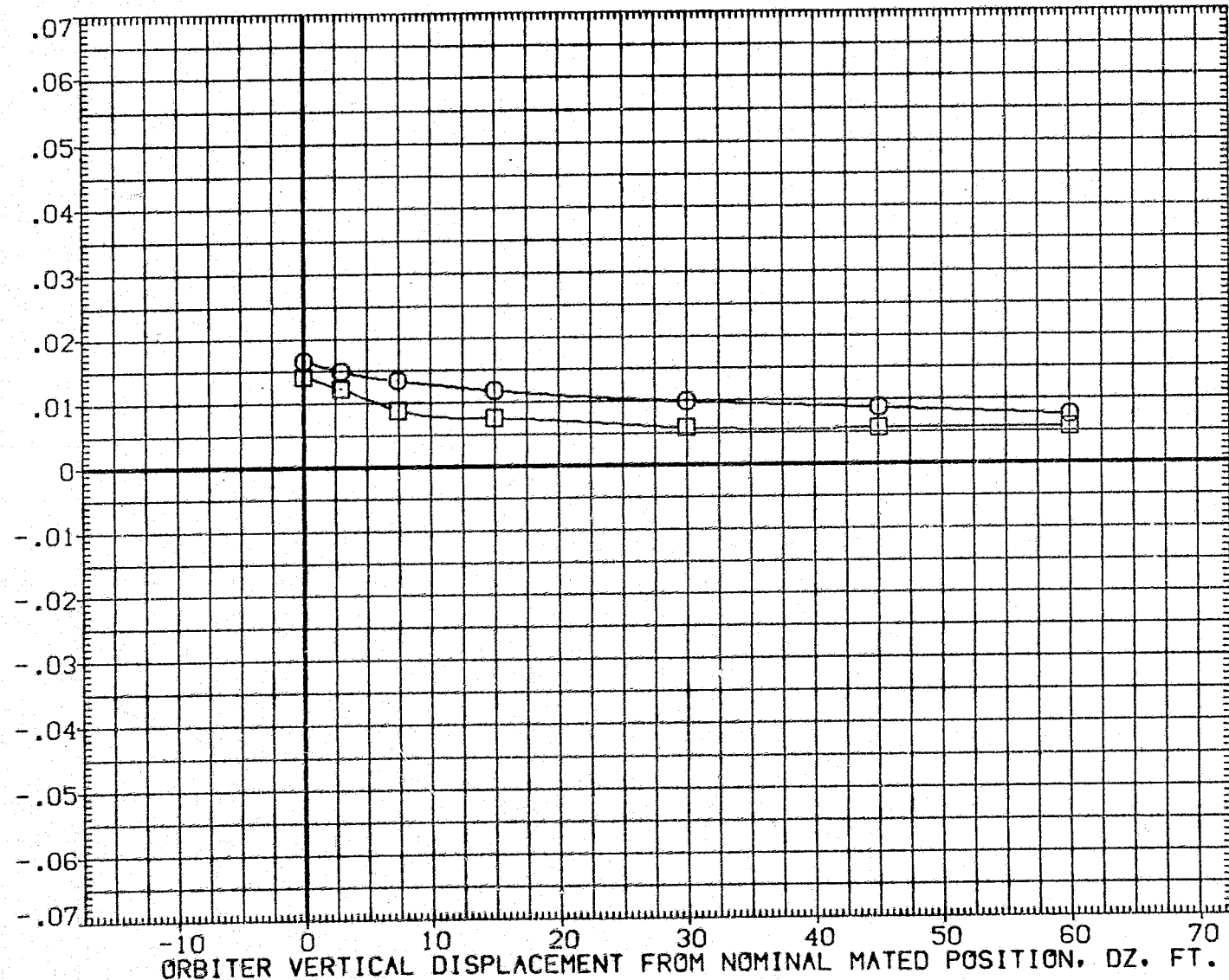


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

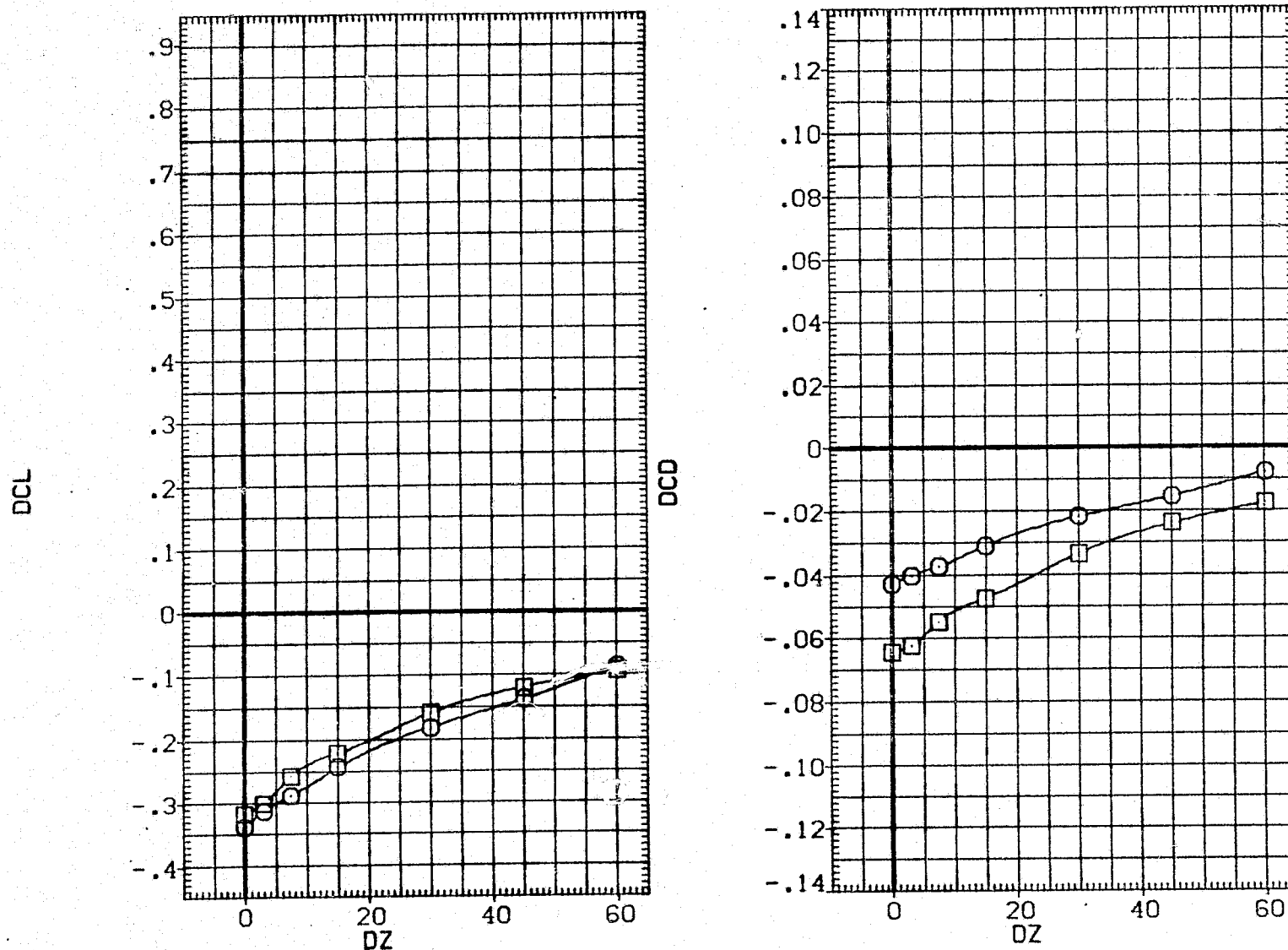


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN111)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.800
		BETA0	-5.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

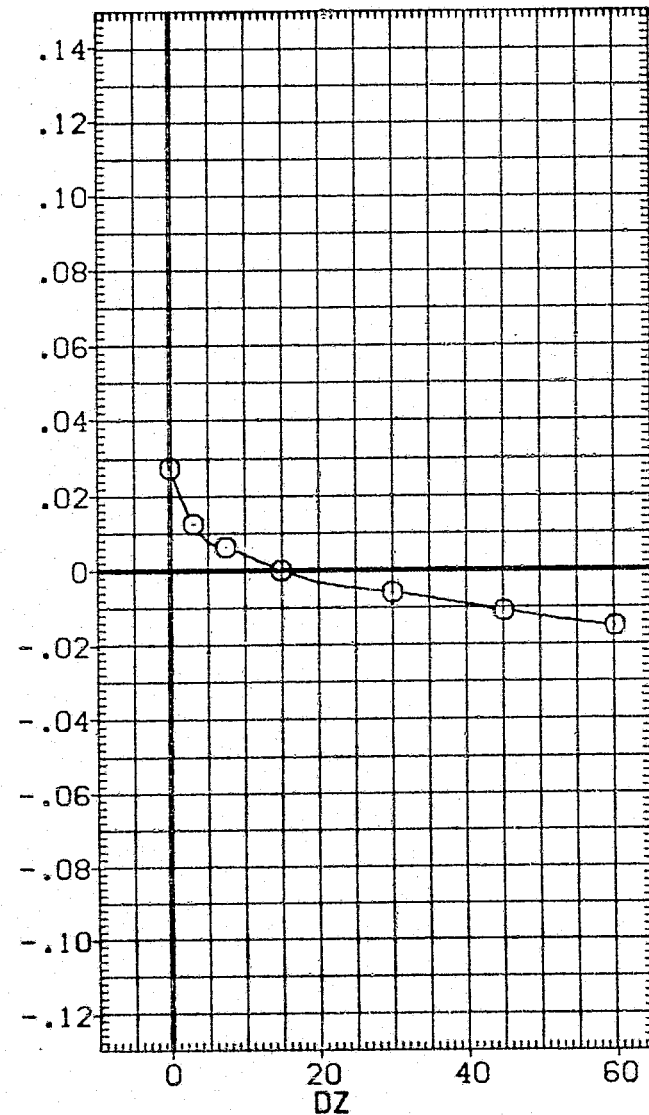
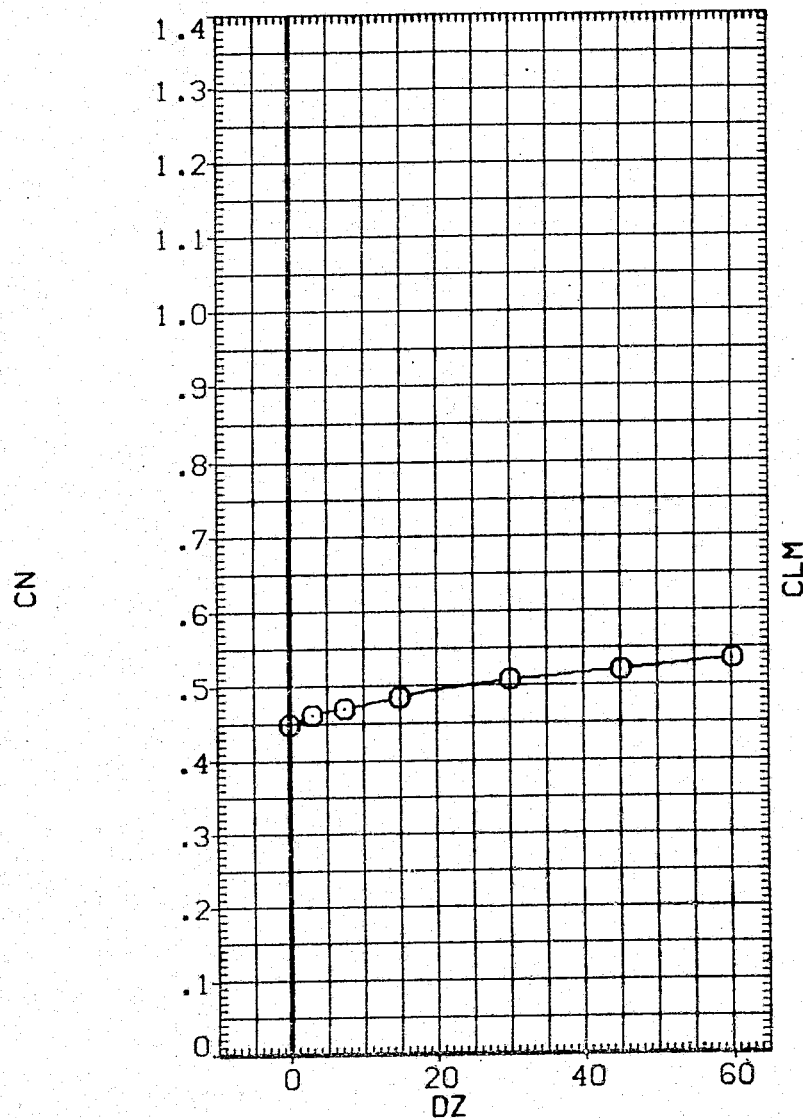


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X3
YMRP	.0000	IN.Y0
ZMRP	.375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

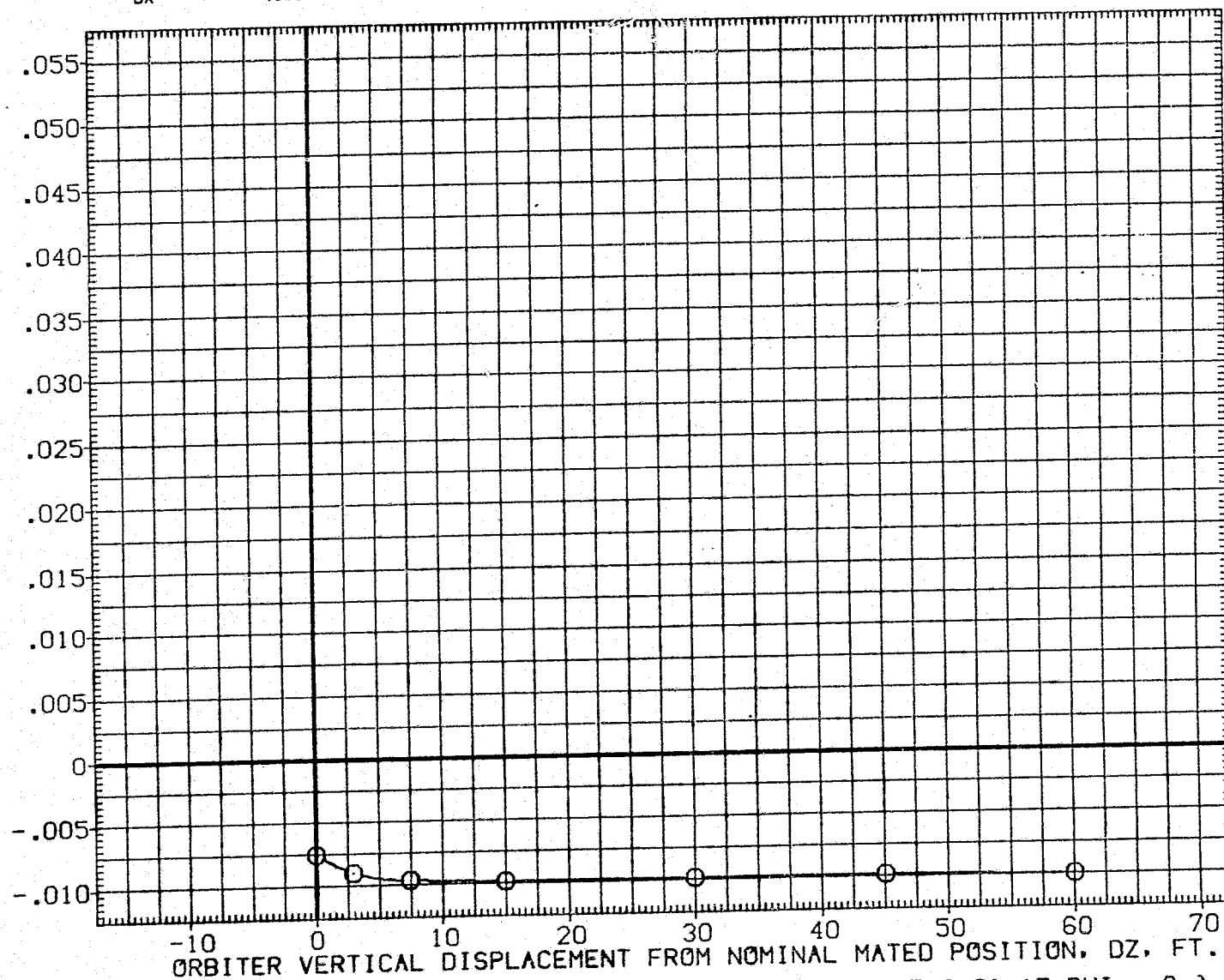


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN111)

SYMBOL		PARAMETRIC VALUES			
○	ALPHA0	ELV-1B	.000	ELV-0B	3.000
	10.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

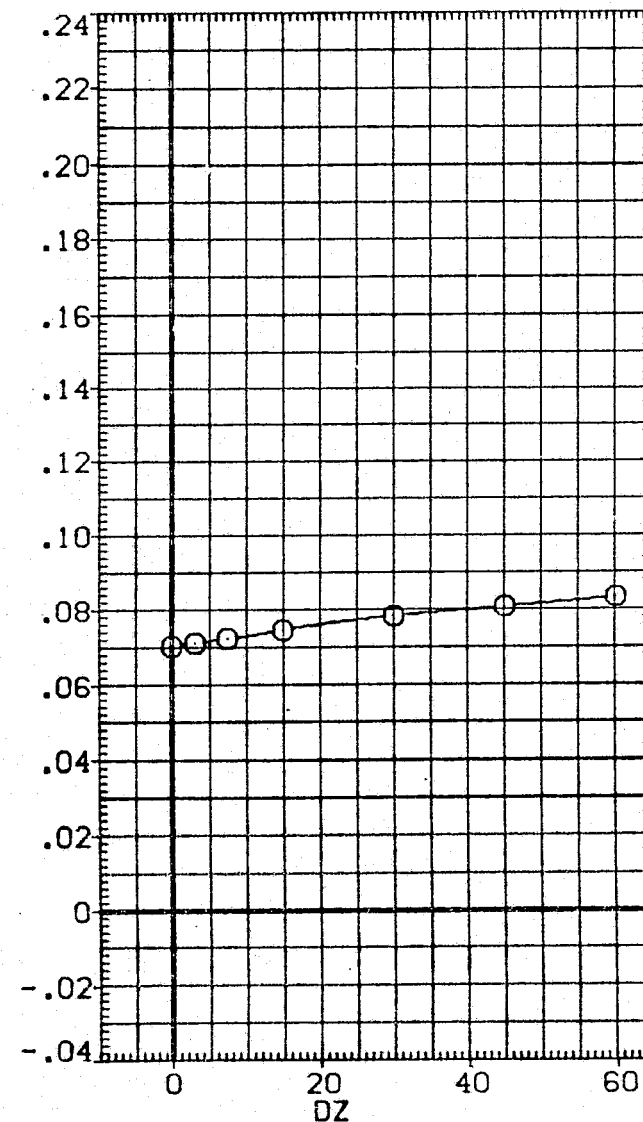
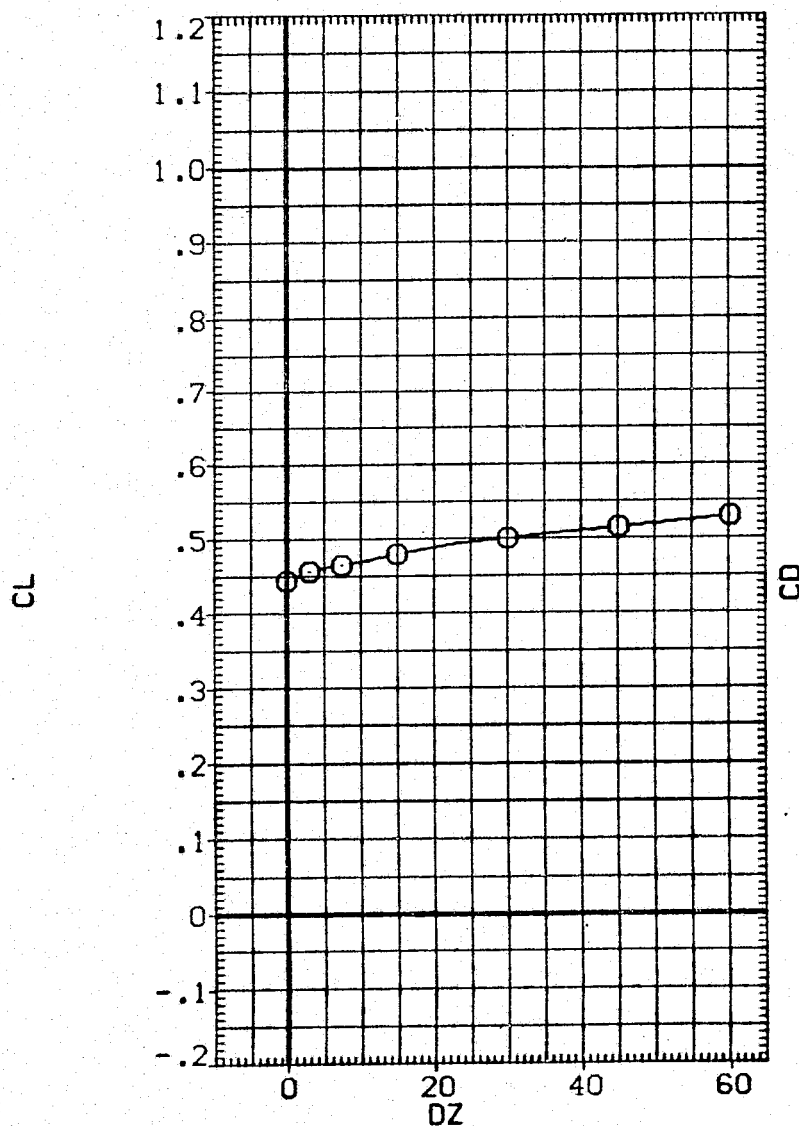


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

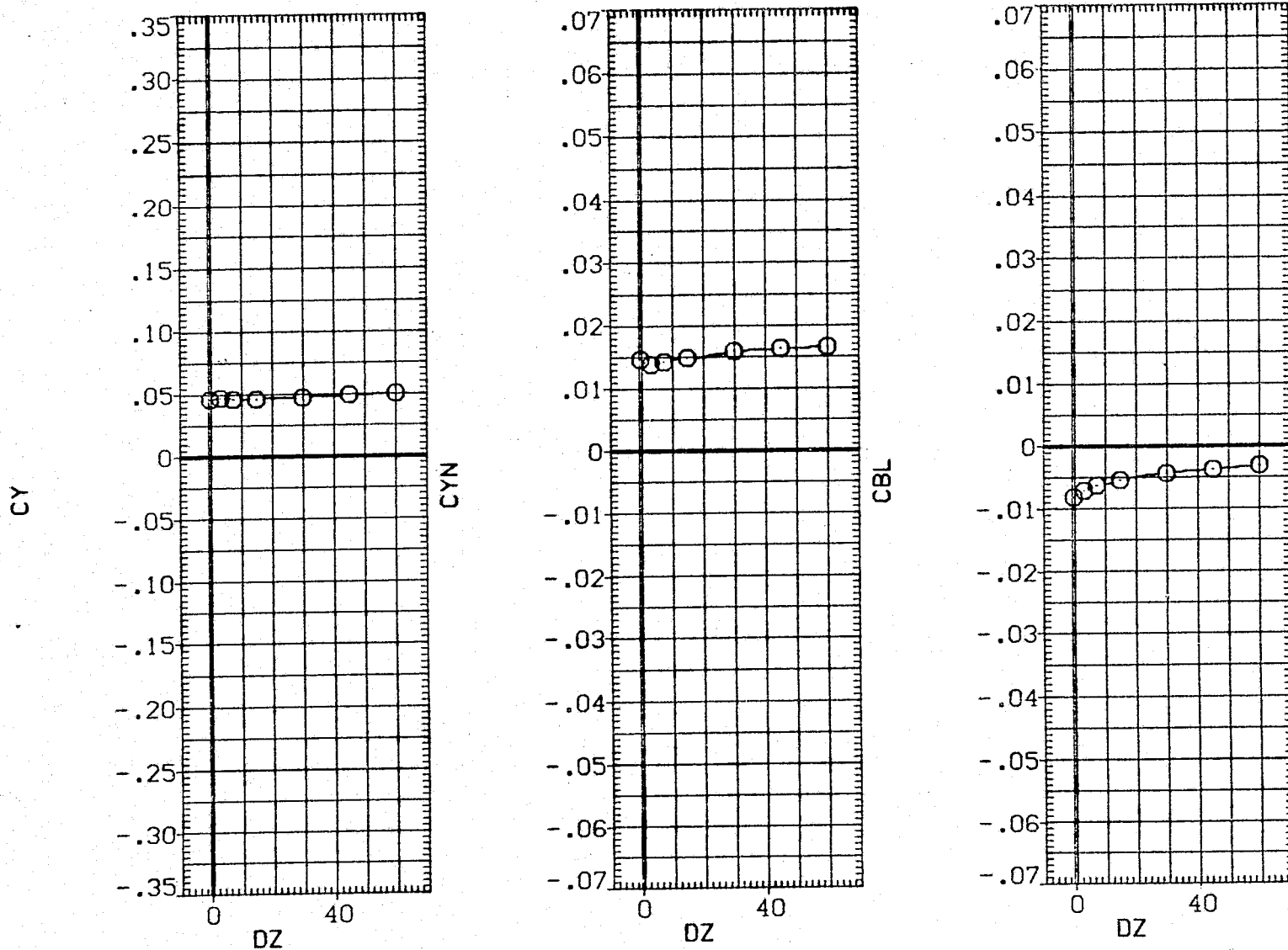


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (111 - 007)(VGN111)

SYMBOL
○ALPHA0
10.000

PARAMETRIC VALUES

ALPHA0	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	10.000	BETA0	-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

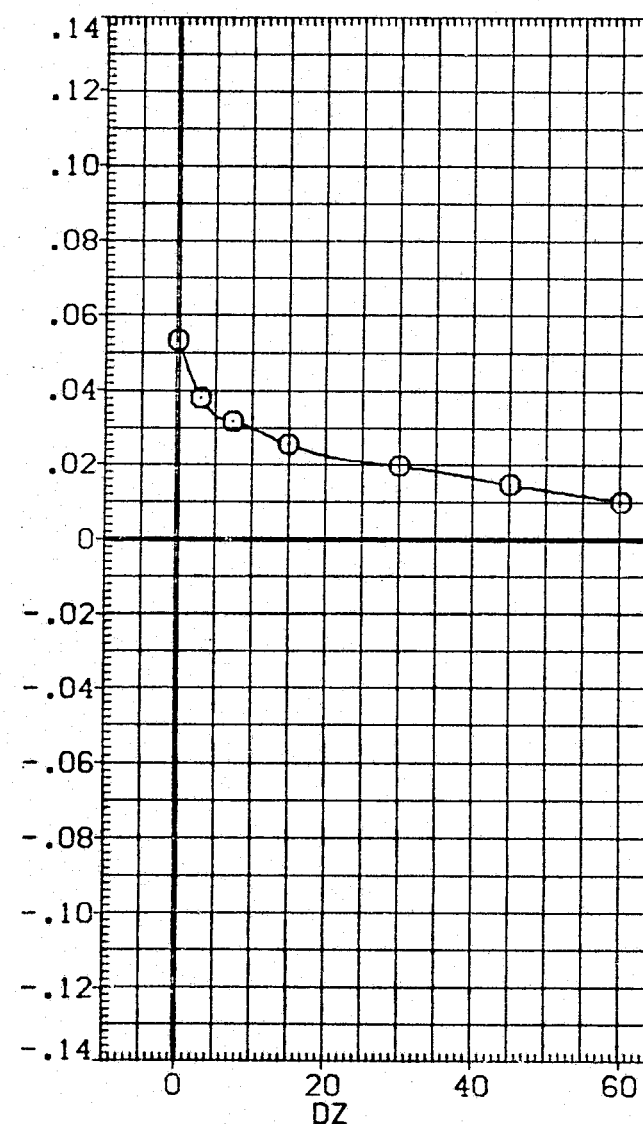
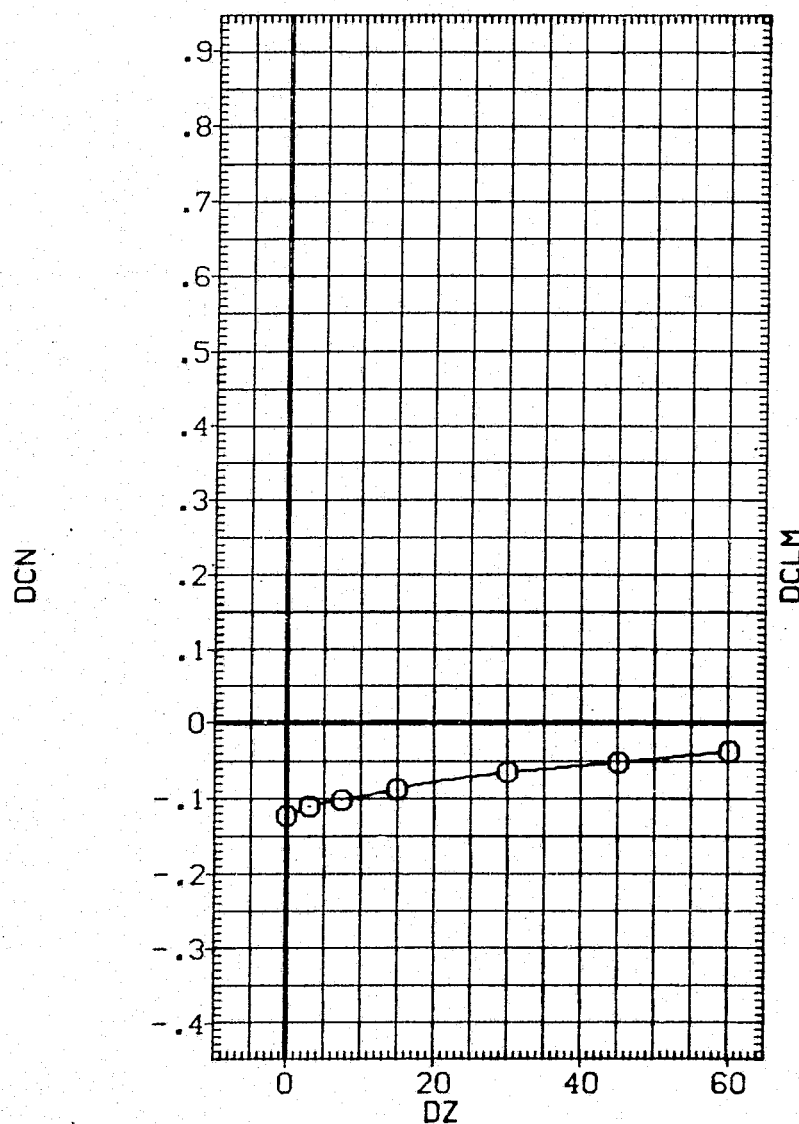


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		OY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

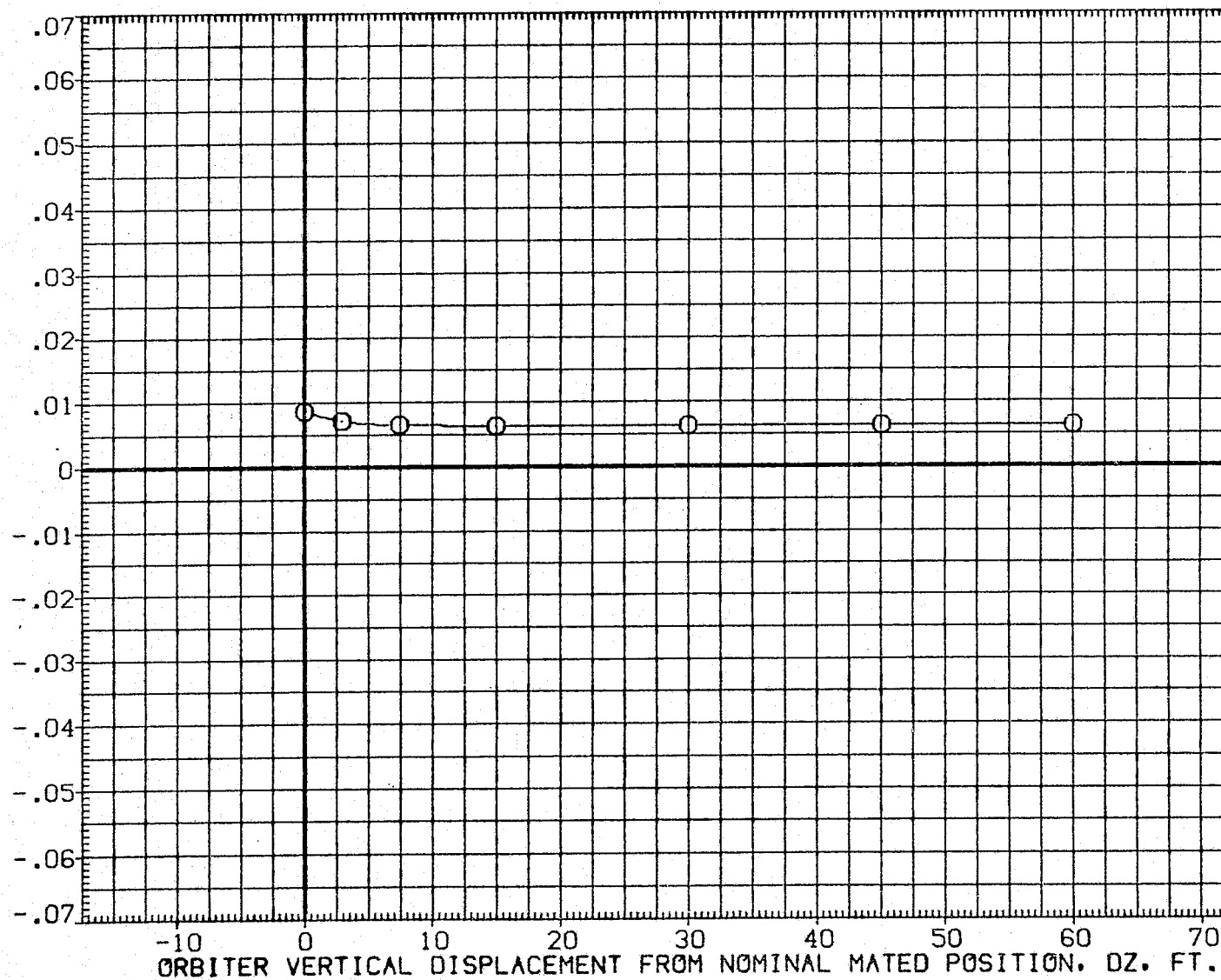


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (111 - 007)(VGN111)

SYMBOL ○	ALPHA0	PARAMETRIC VALUES			
	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

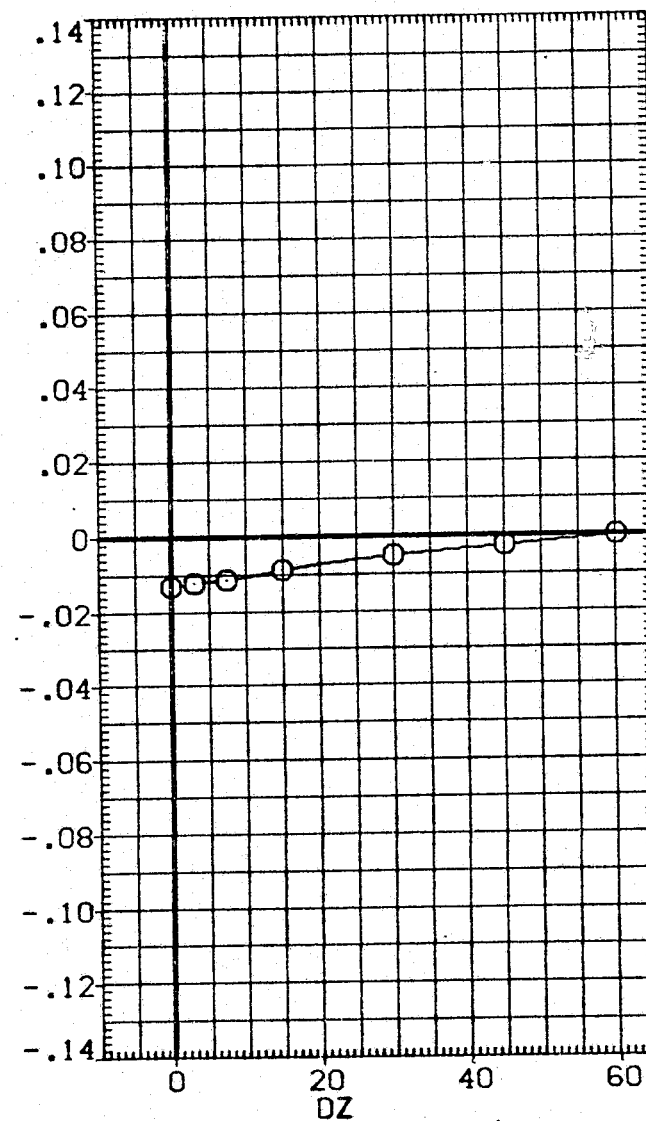
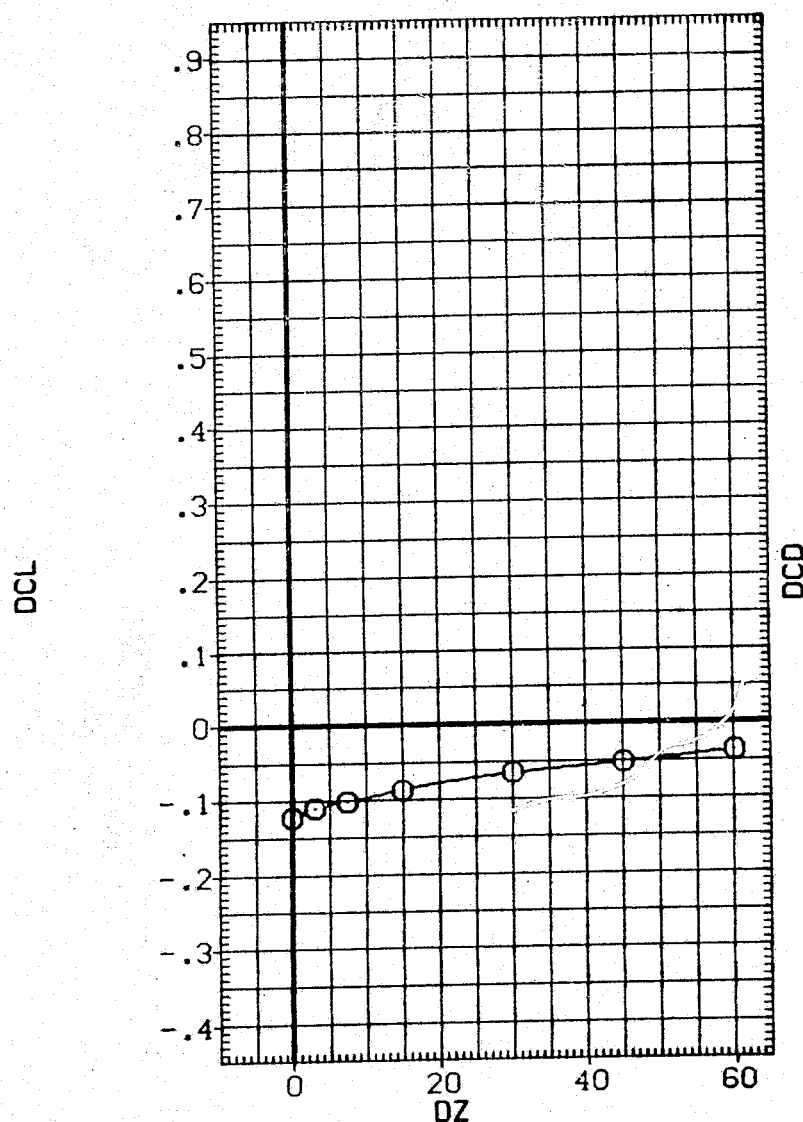


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

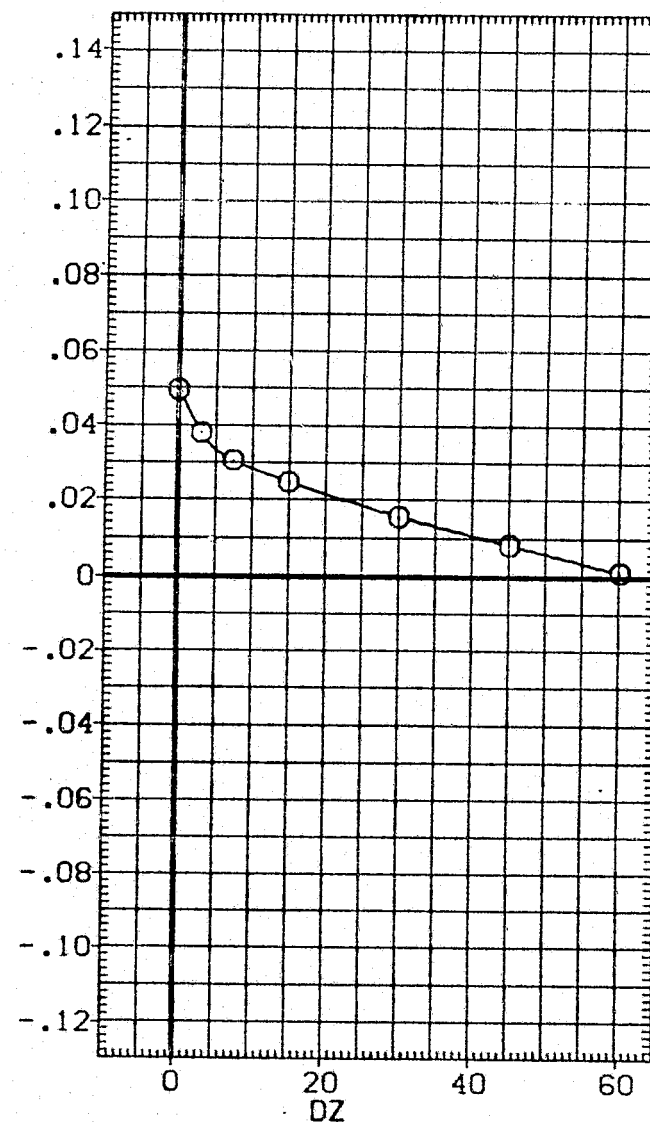
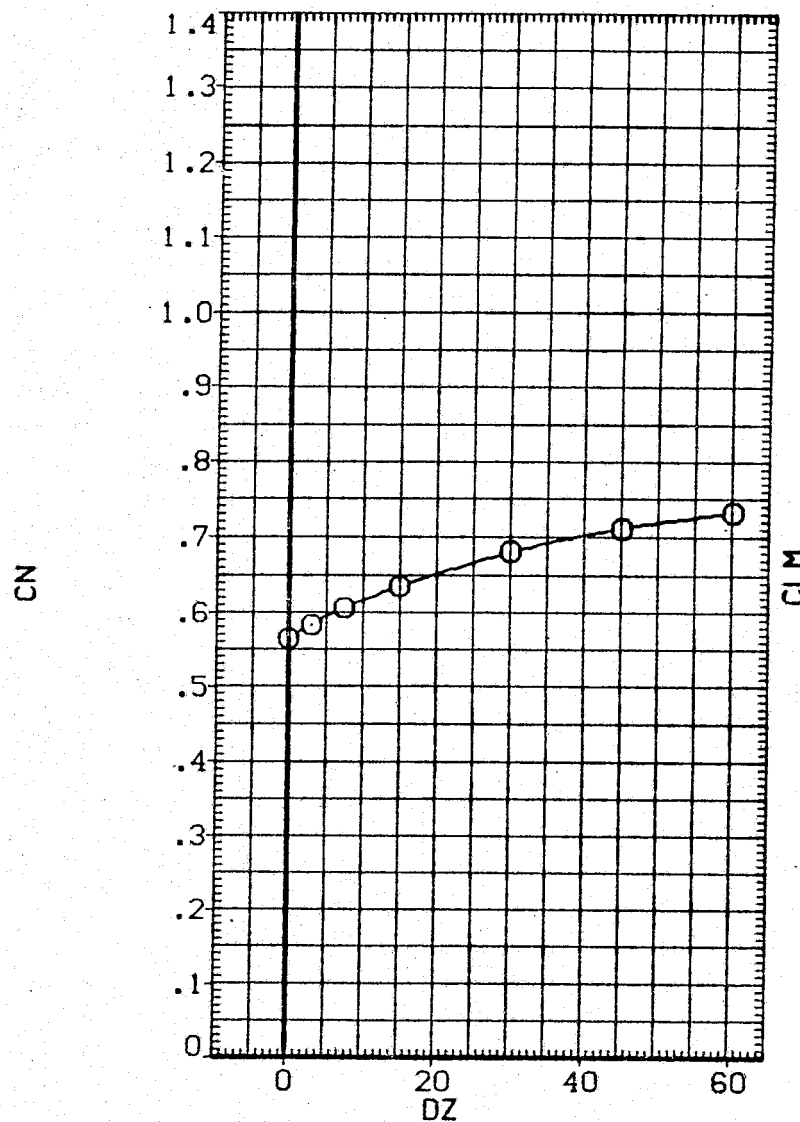


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN113)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

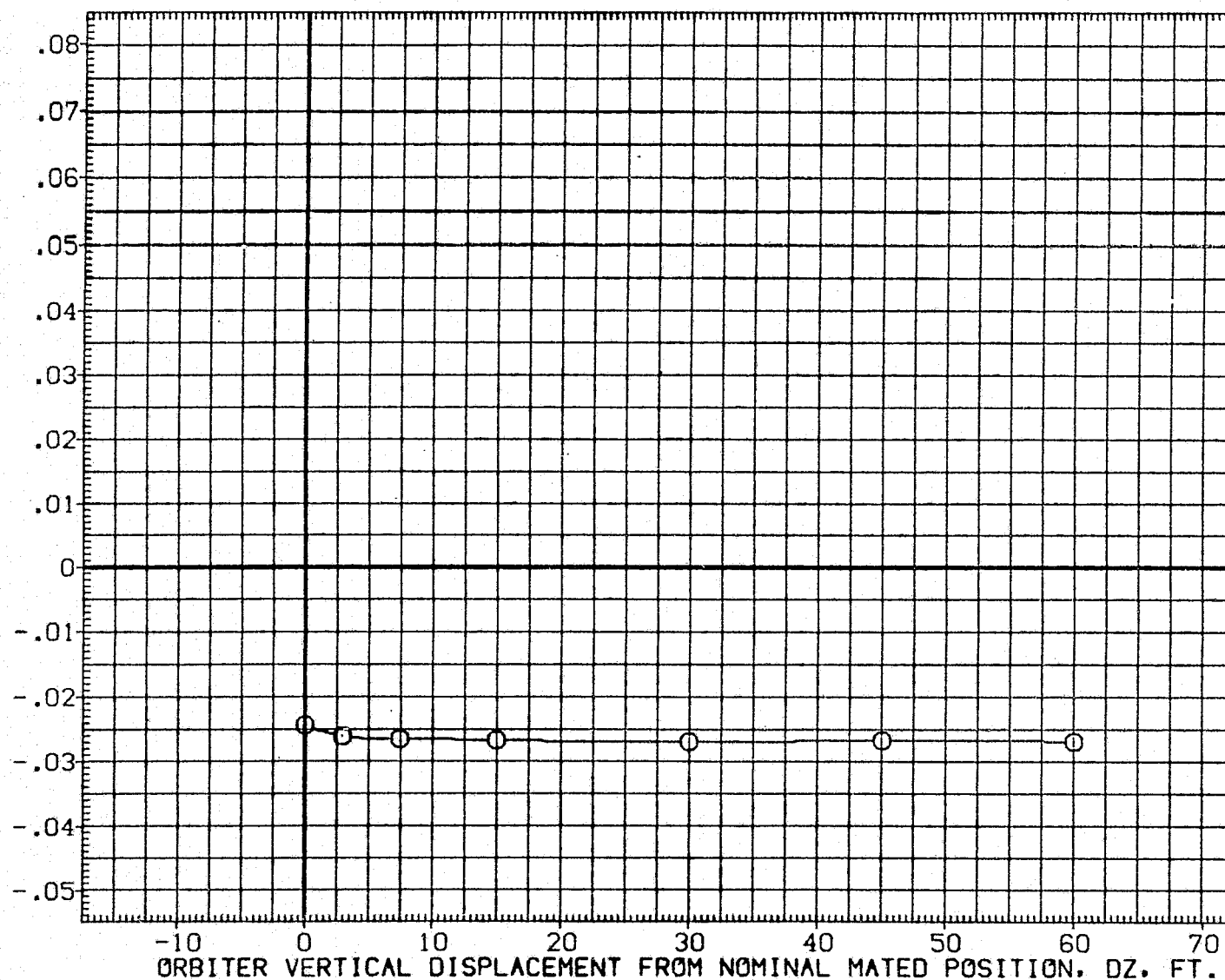


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

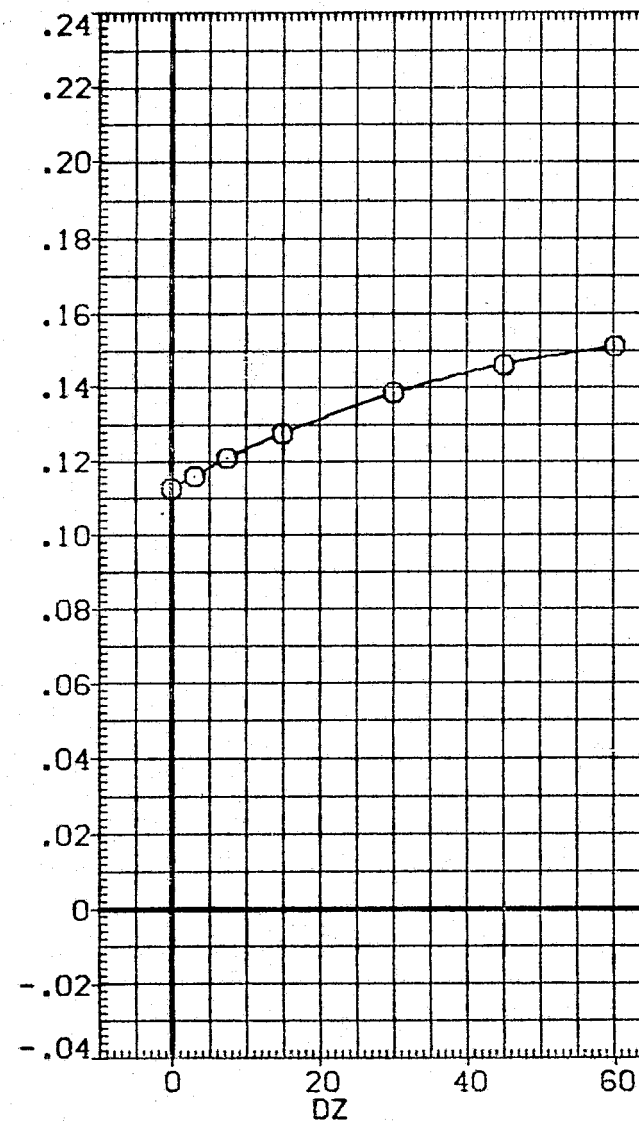
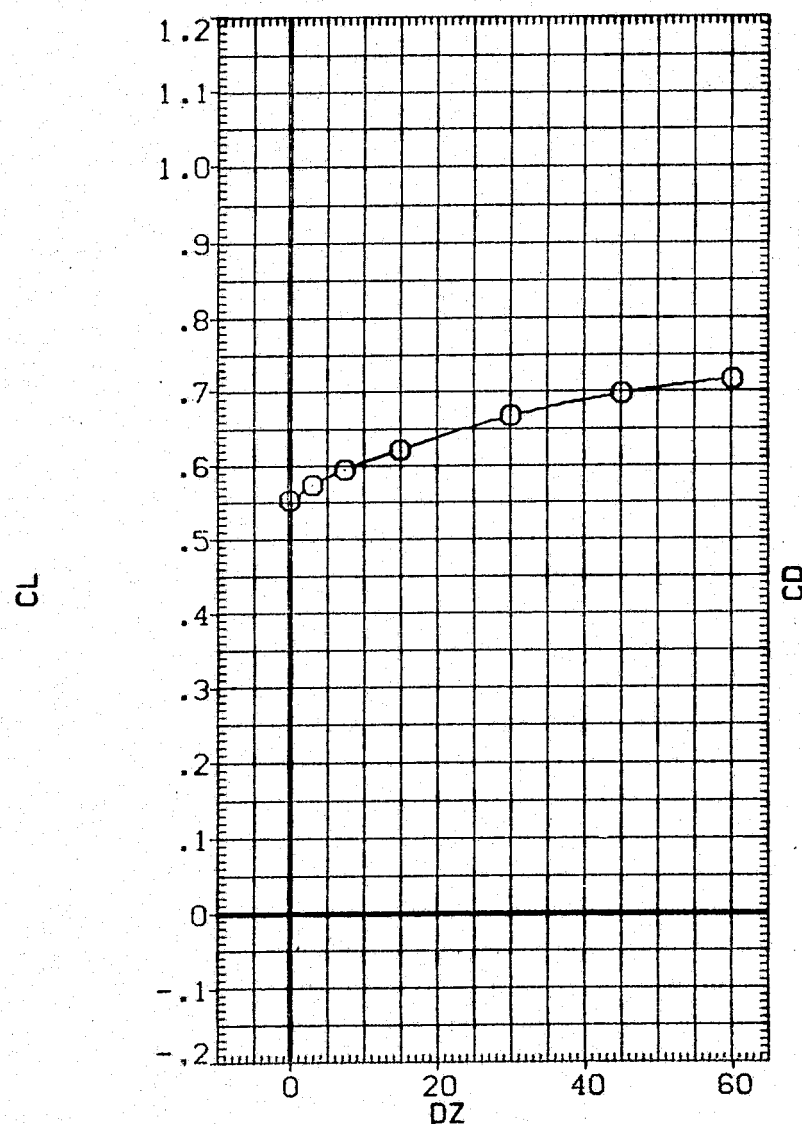


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN113)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

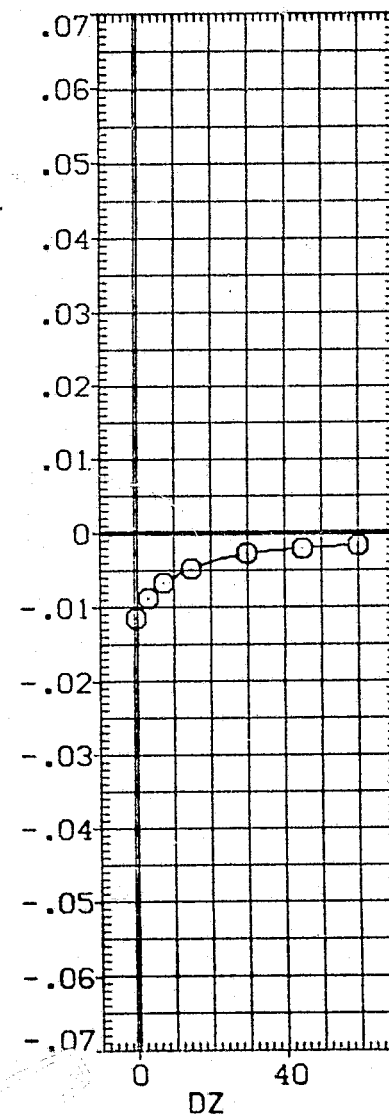
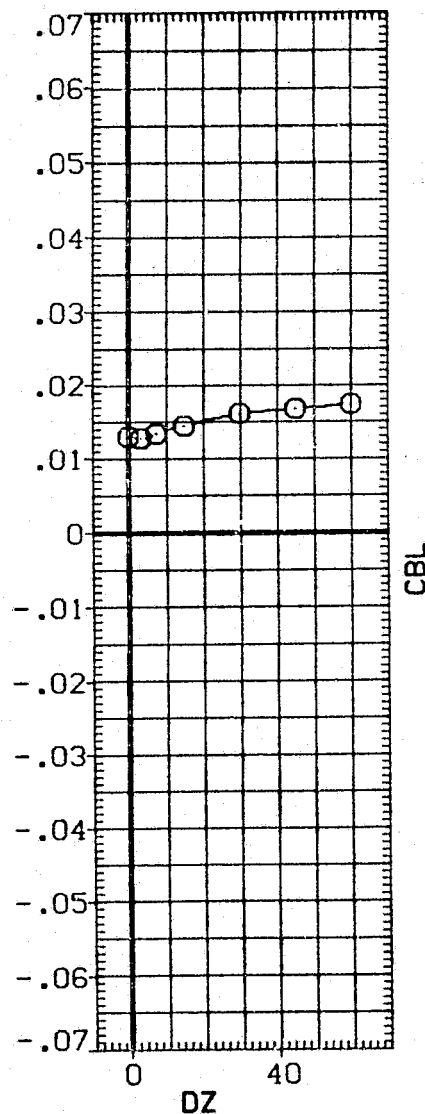
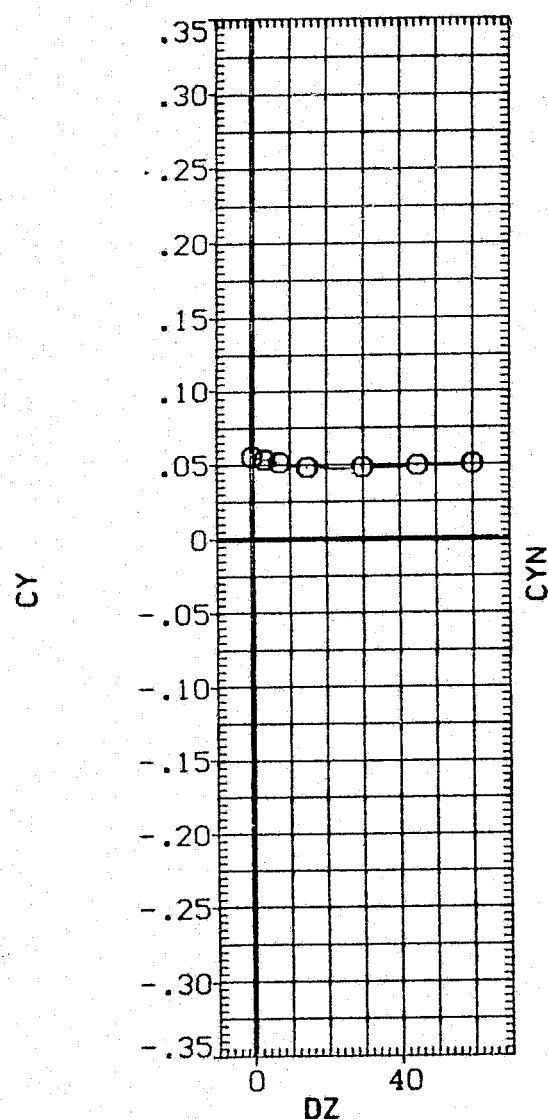


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	14.000	ALPHAC	8.000	BETAC	.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

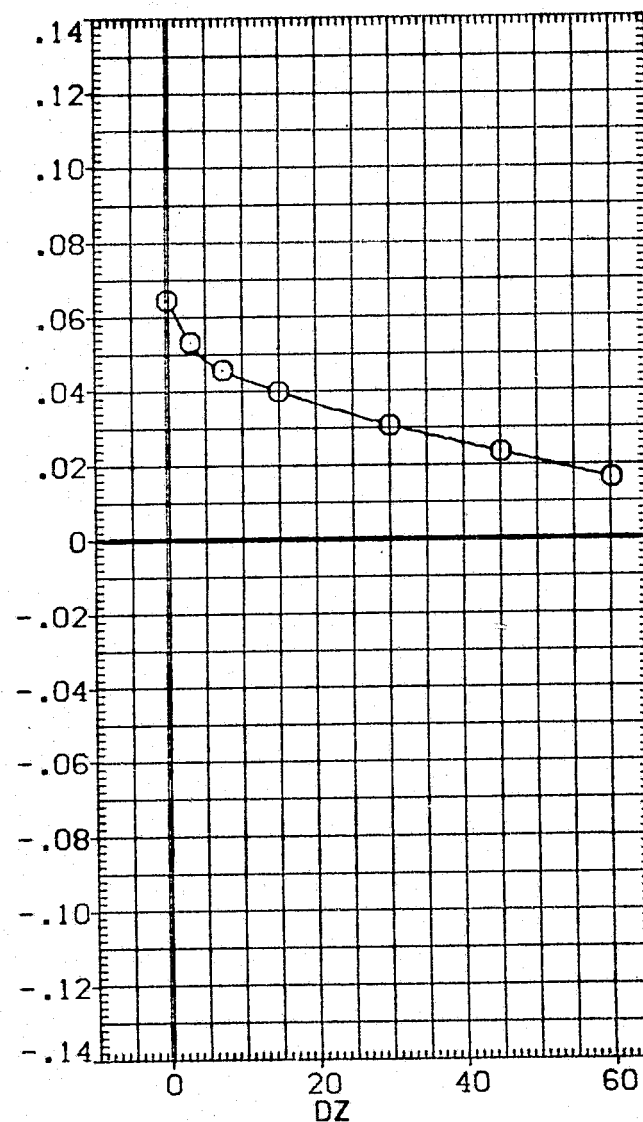
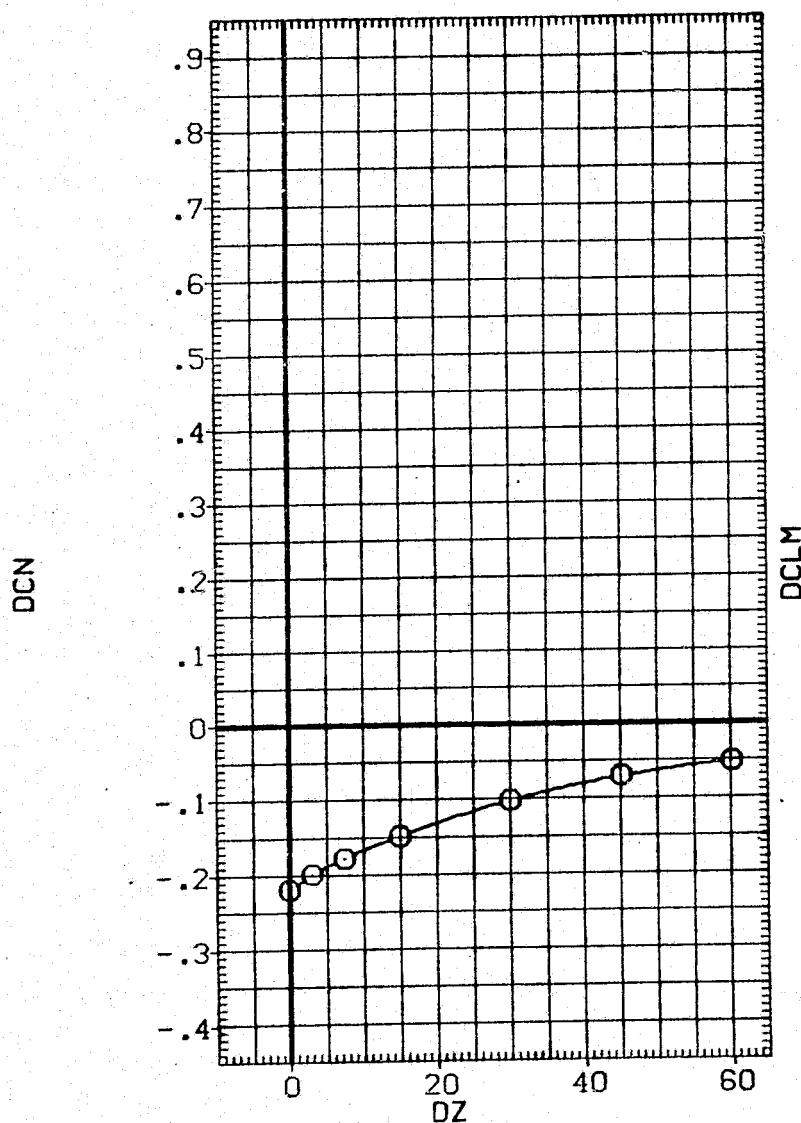


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (113 - 007)(VGN113)

SYMBOL
○

ALPHA0
14.000

ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000 BETAC .000
.000 ELV-OB 3.000
5.000 MACH .600
.000 DX .000
10.000 BETA0 -5.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

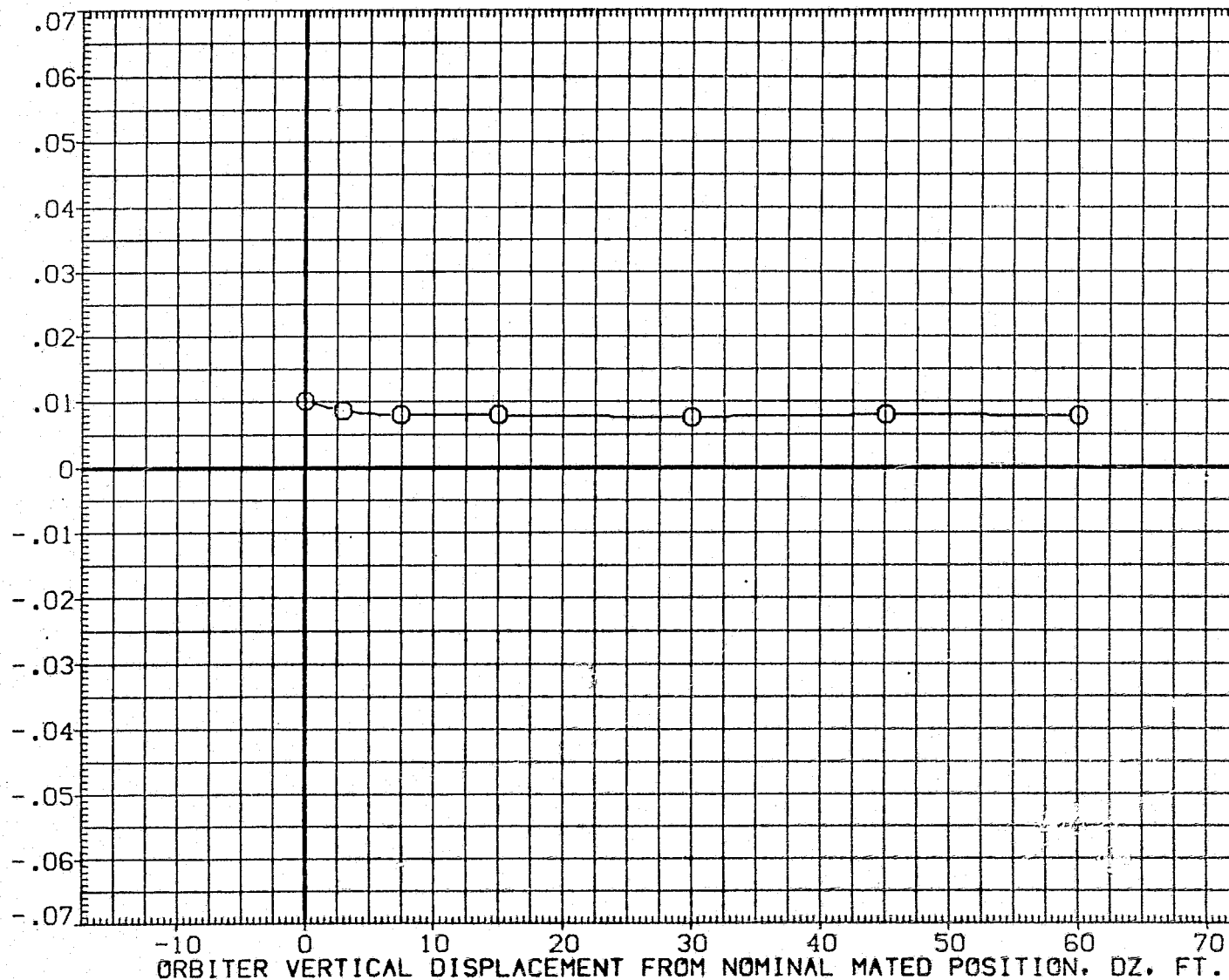


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	14.000	ALPHAC	8.000	BETAC	.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

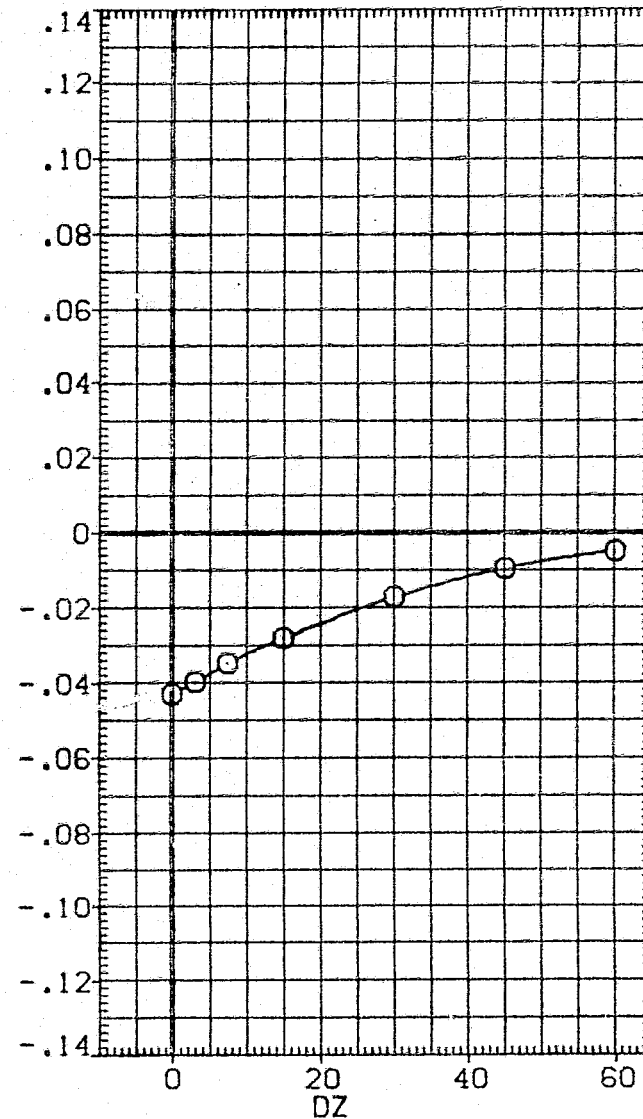
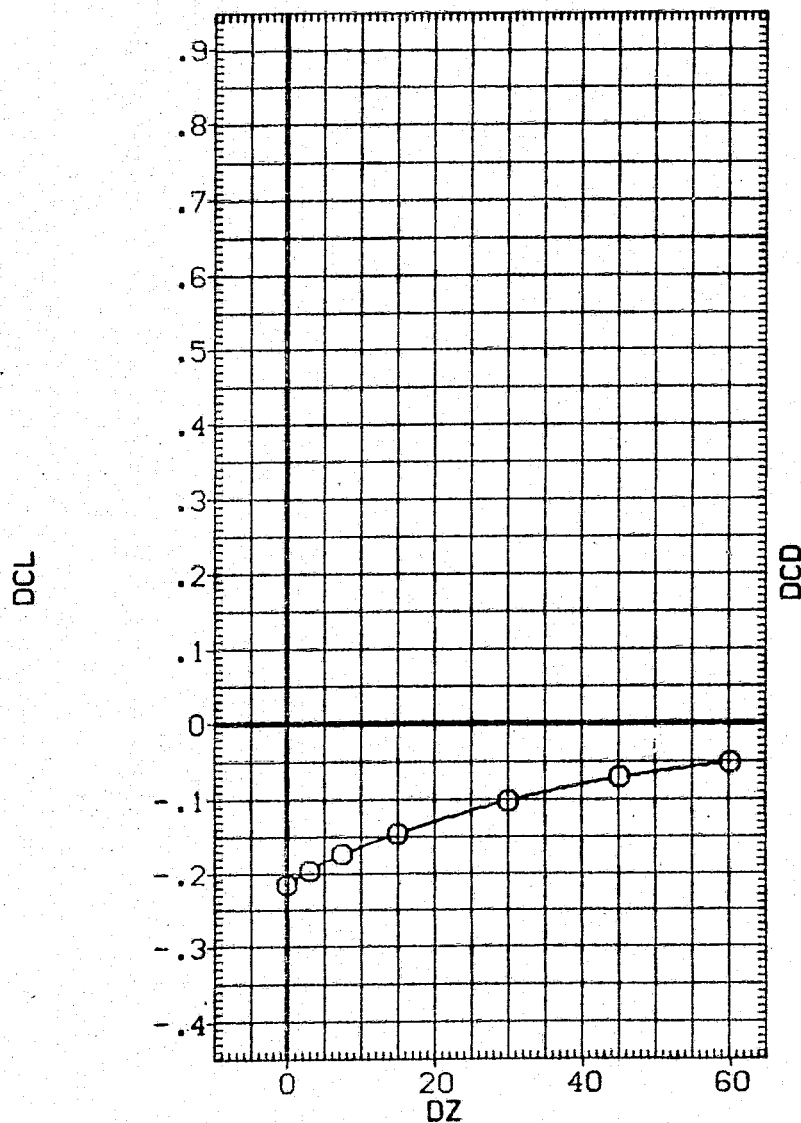


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN112)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000	ELEVON	.000	3.000	
□	14.000	PHI	5.000	.600	
		BETAC	.000	BETA0	-5.000
		DX	10.000	DY	10.000
			ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

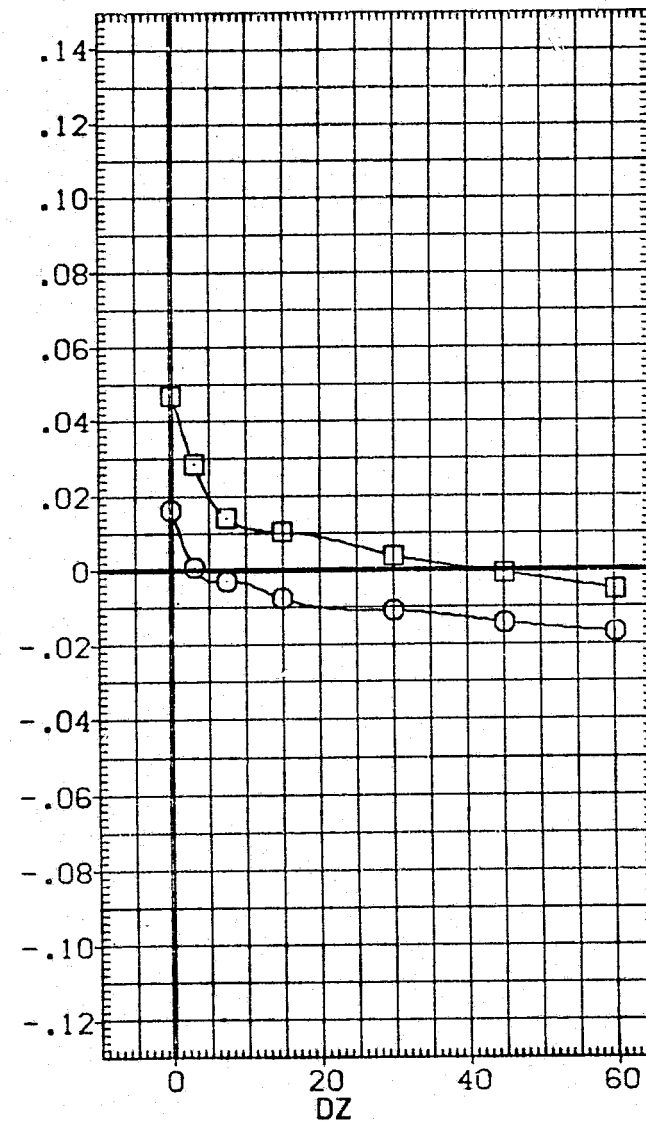
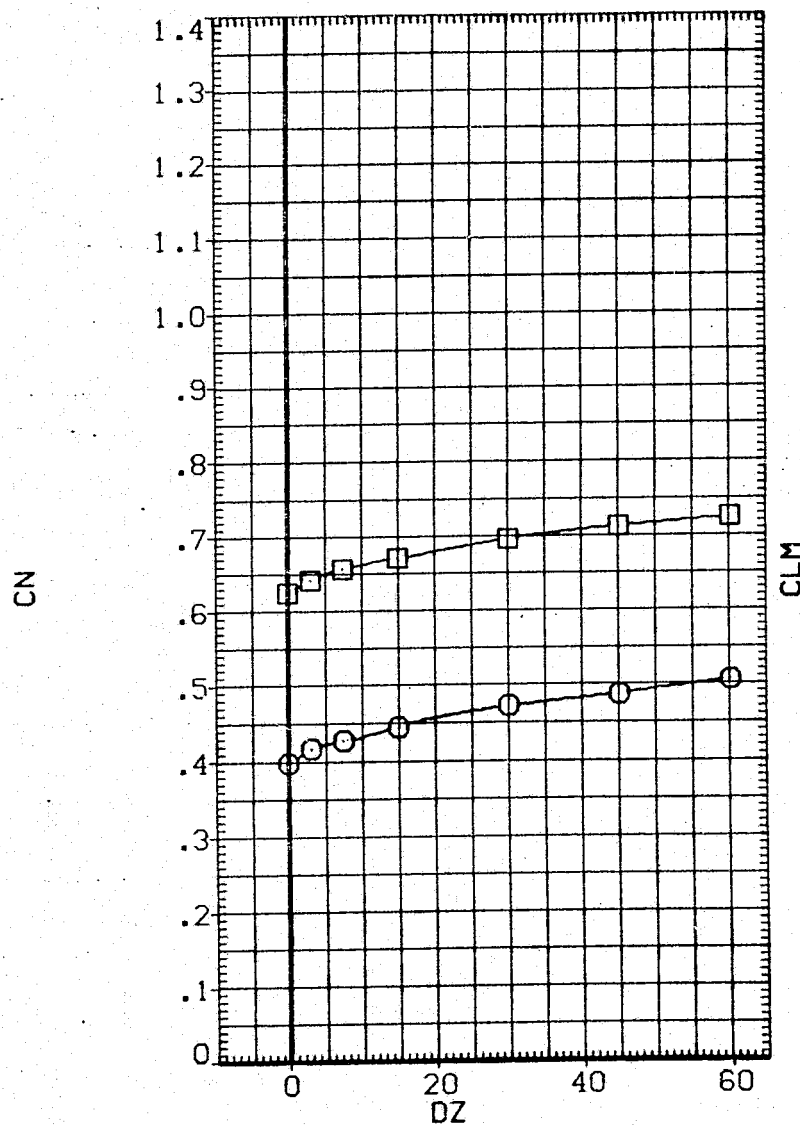


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	3.000
○	10.000	ELEVON	.000	MACH	.600
□	14.000	PHI	5.000	BETA0	-5.000
		BETAC	.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

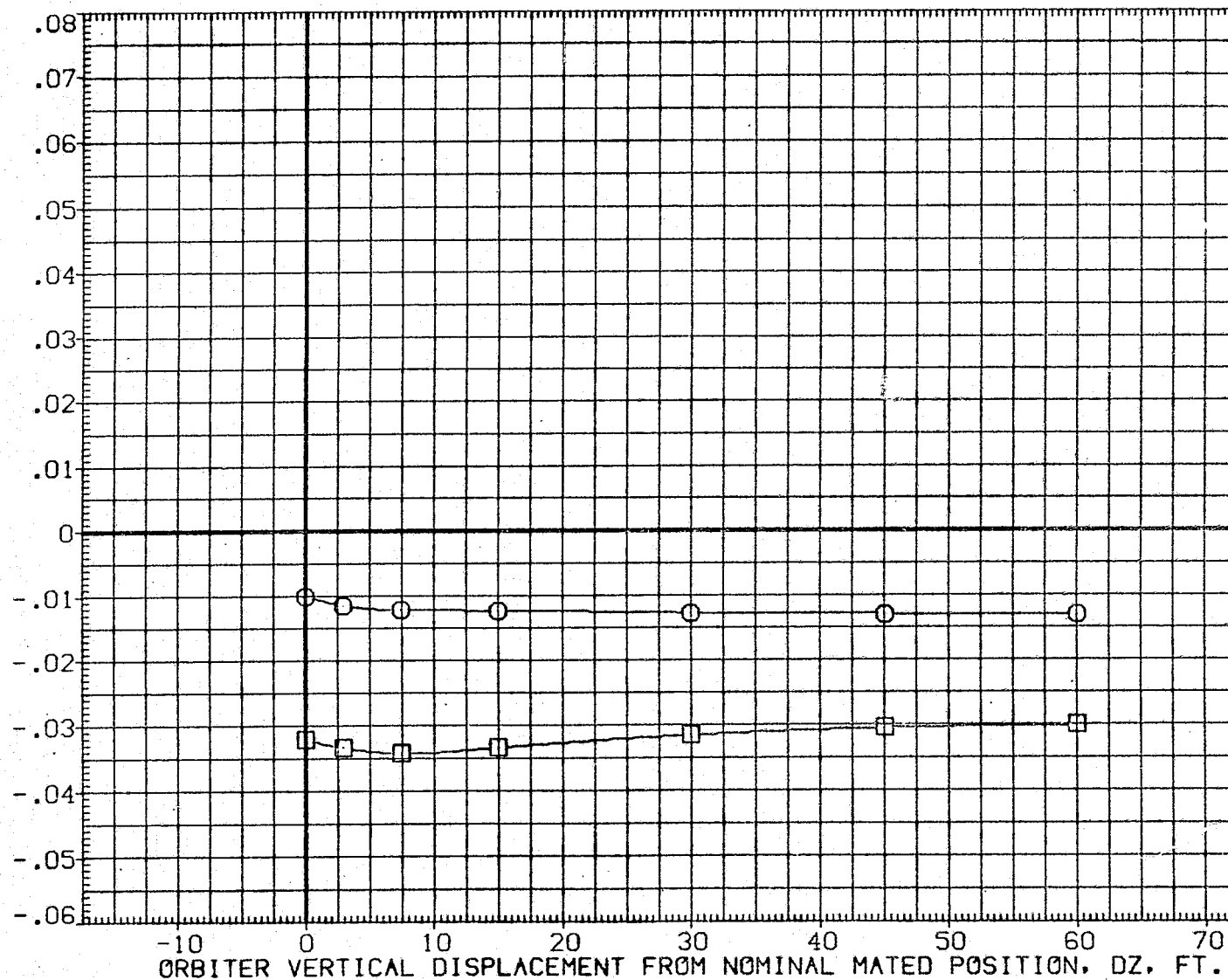


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN112)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

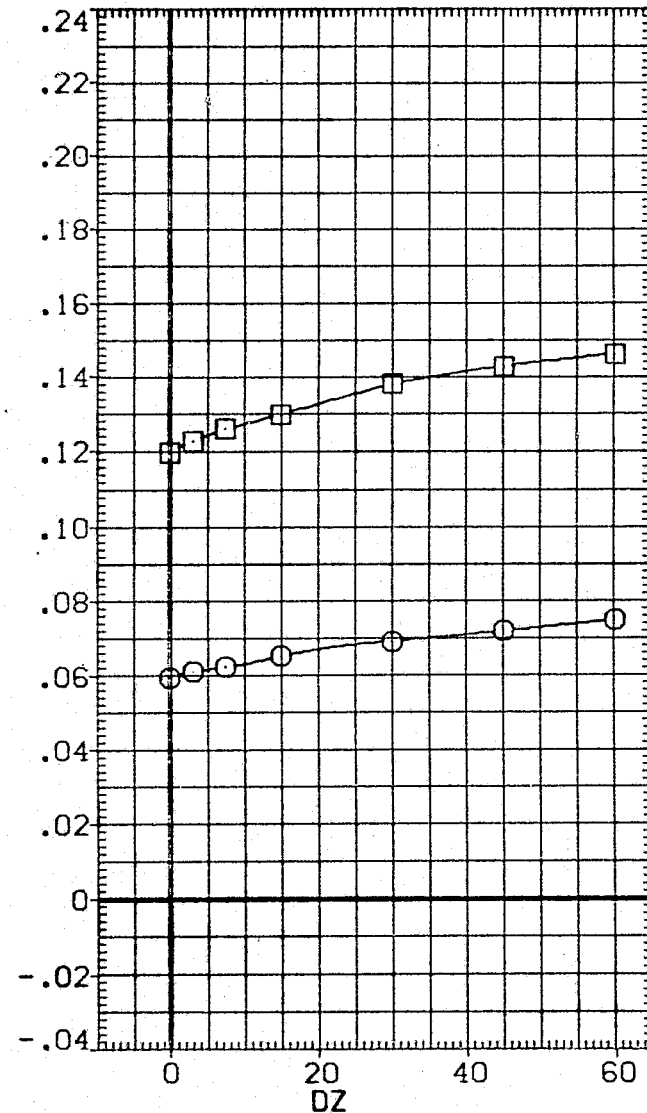
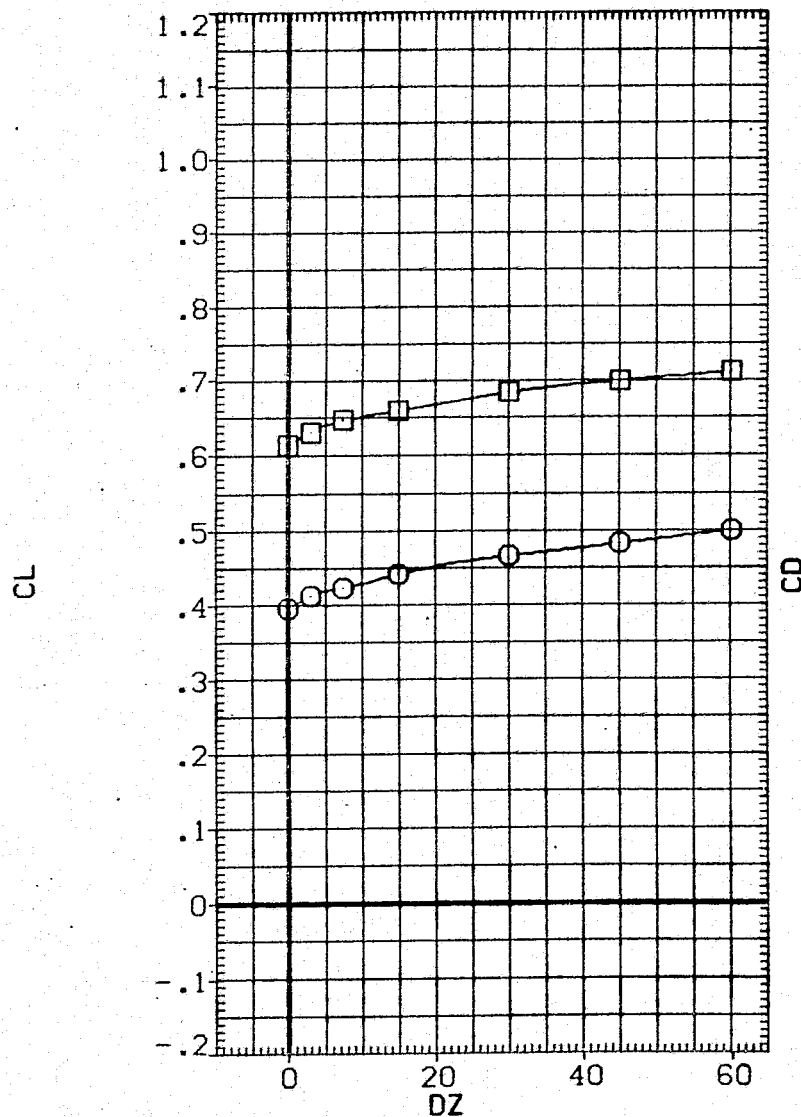


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

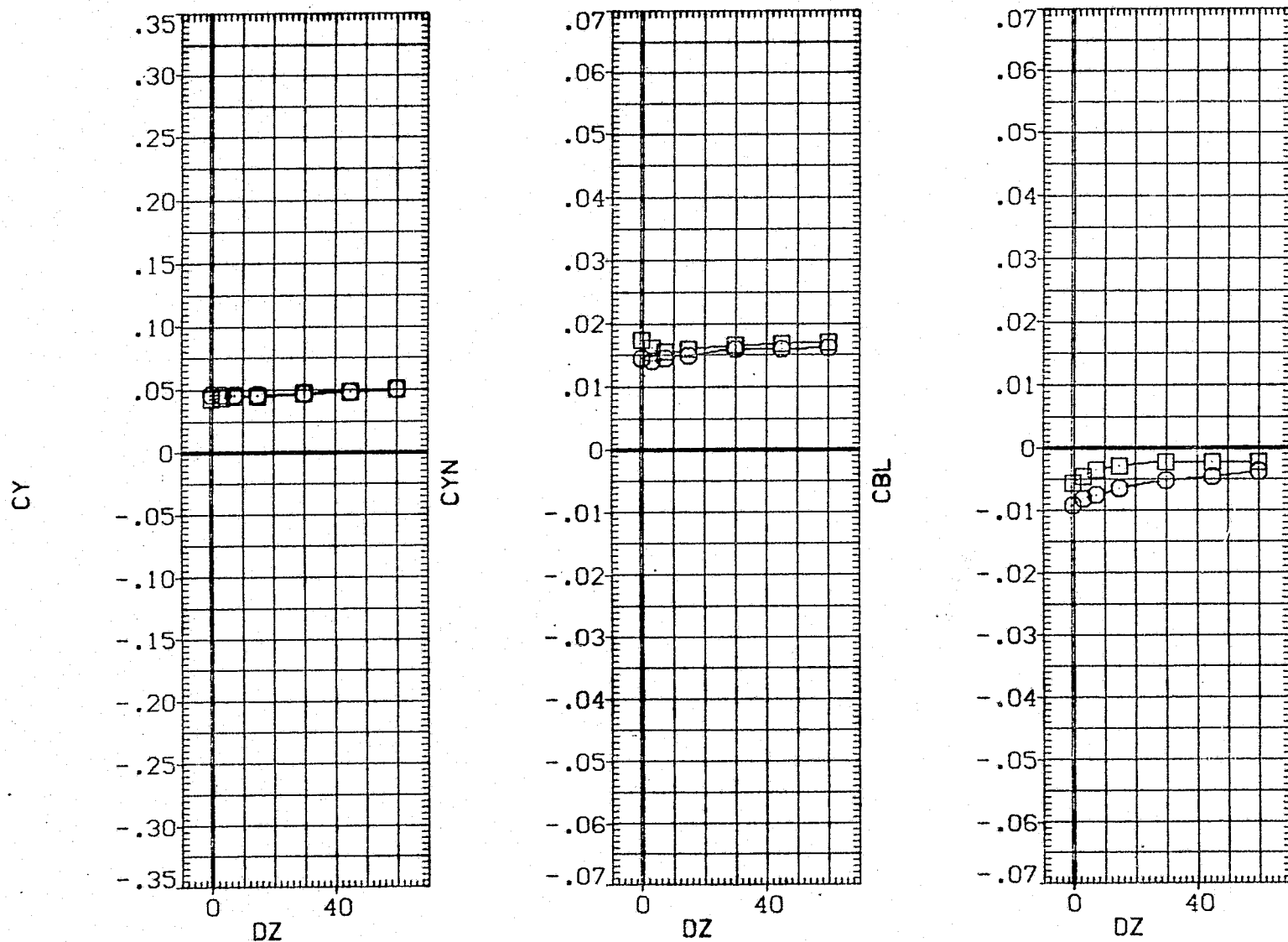


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (112 - 007) (VGN112)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

10.000

BETAC

ELV-OB

MACH

DX

BETA0

.000

3.000

.600

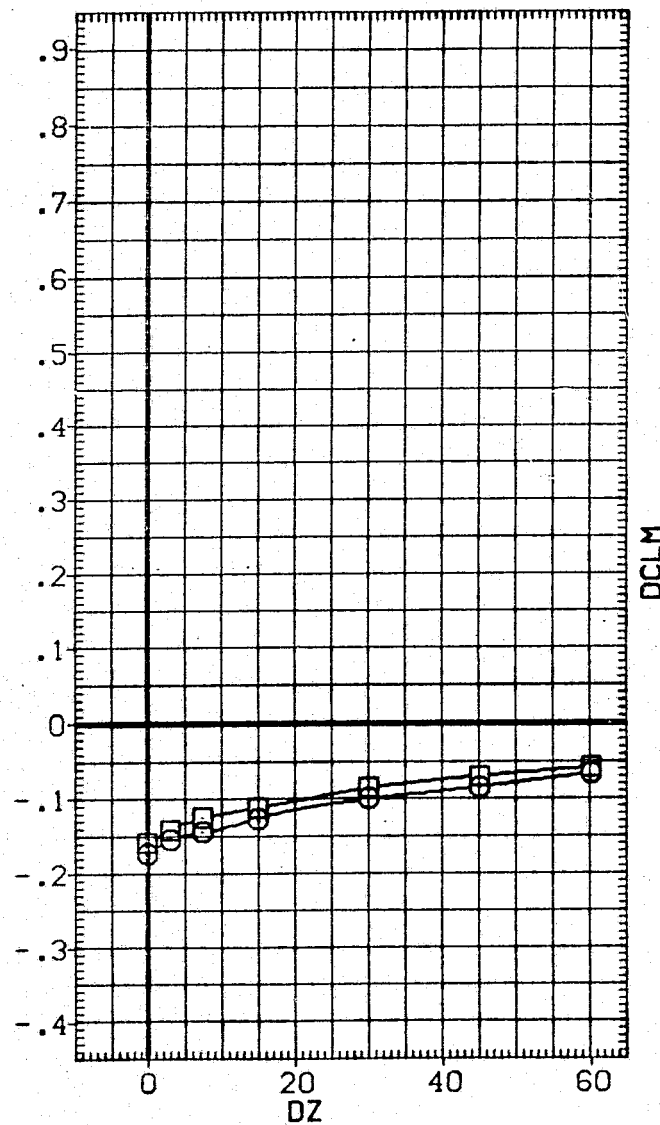
10.000

-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

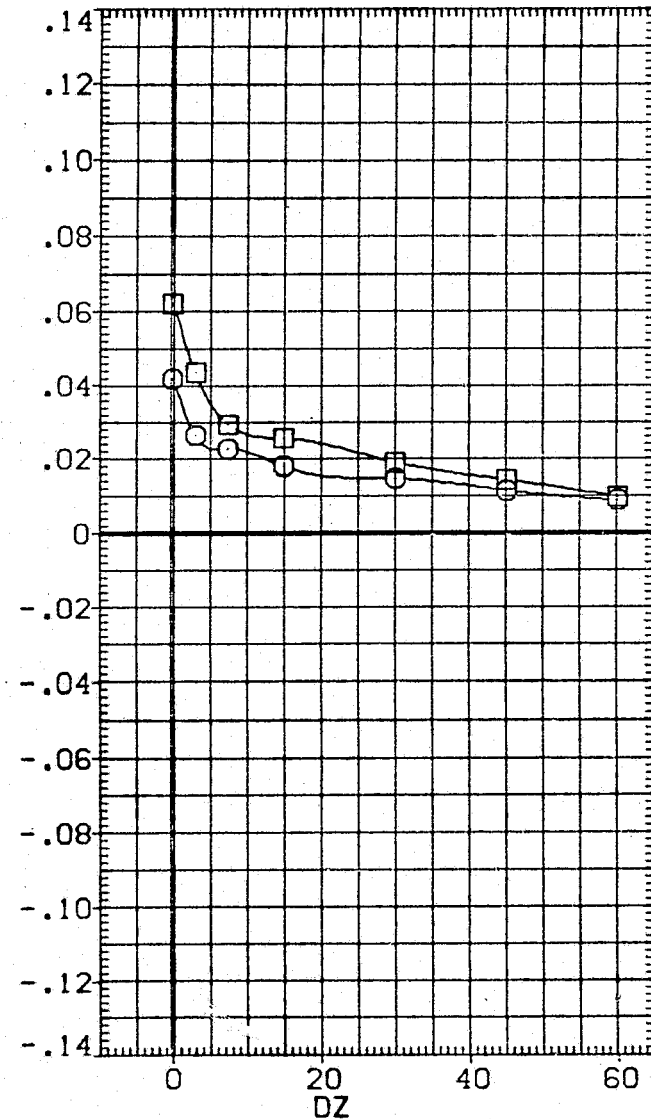


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

4.000 BETAC .000

ELV-1B

.000 ELV-0B 3.000

ELEVON

5.000 MACH .600

PHI

.000 DX 10.000

DY

10.000 BETA0 -5.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

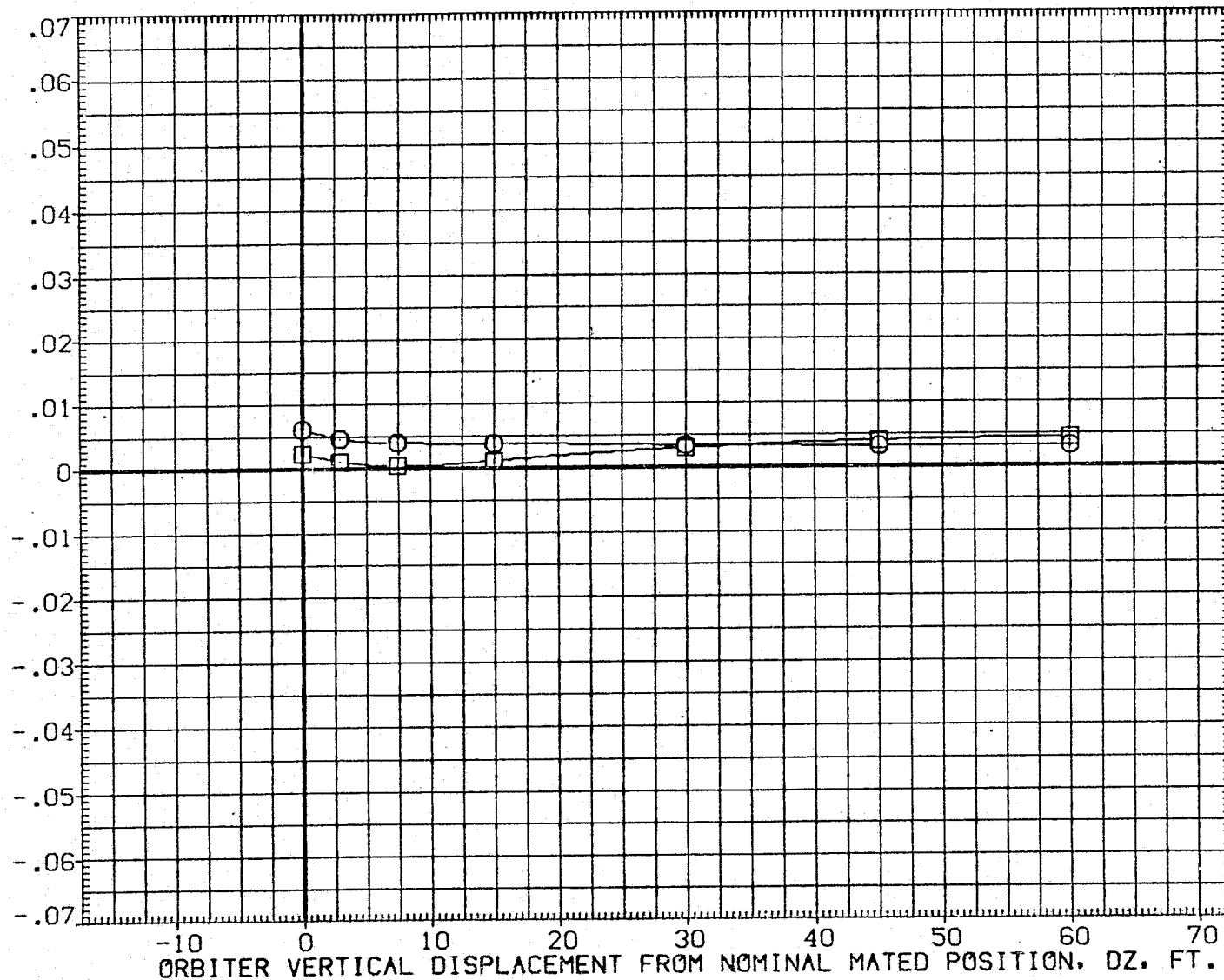


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (112 - 007) (VGN112)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

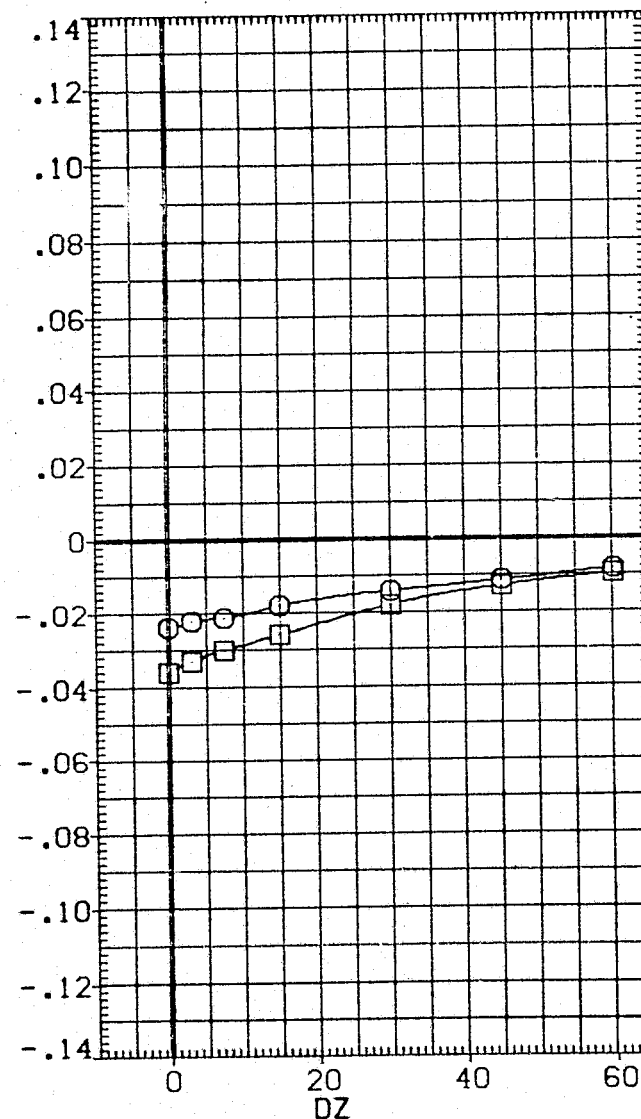
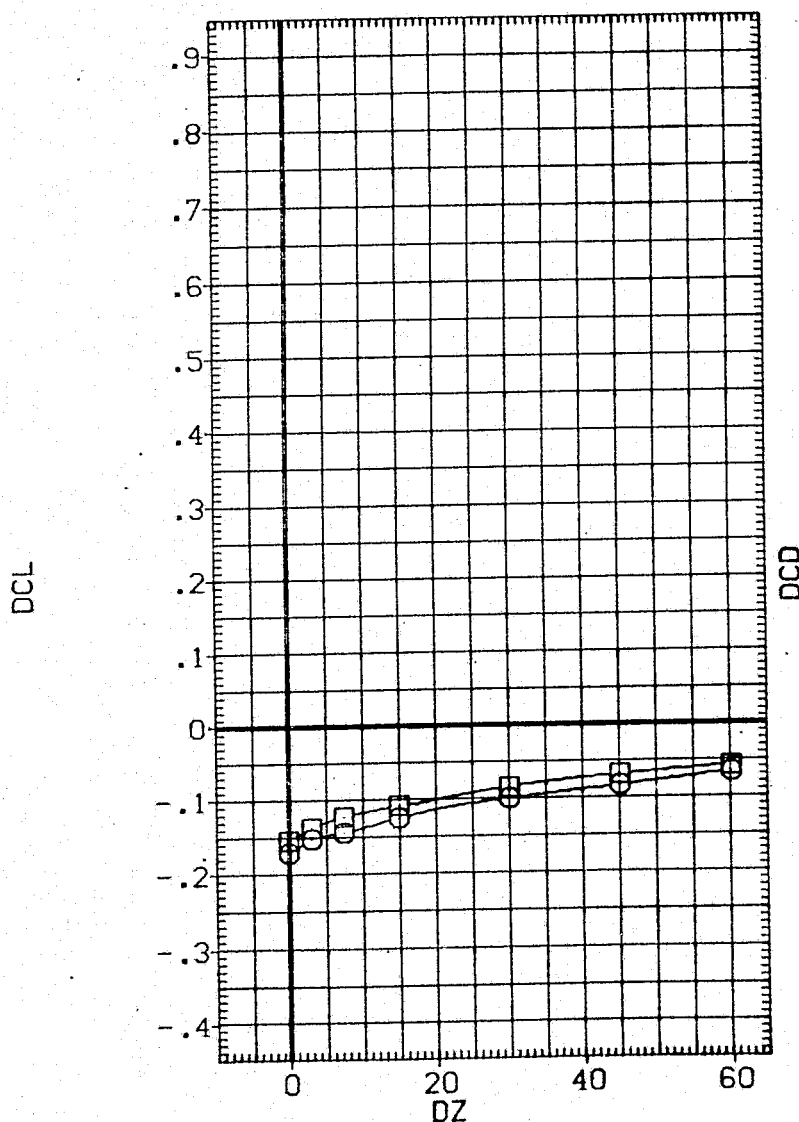


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI .000 BETA0 -5.000
		BETAC .000 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	935.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

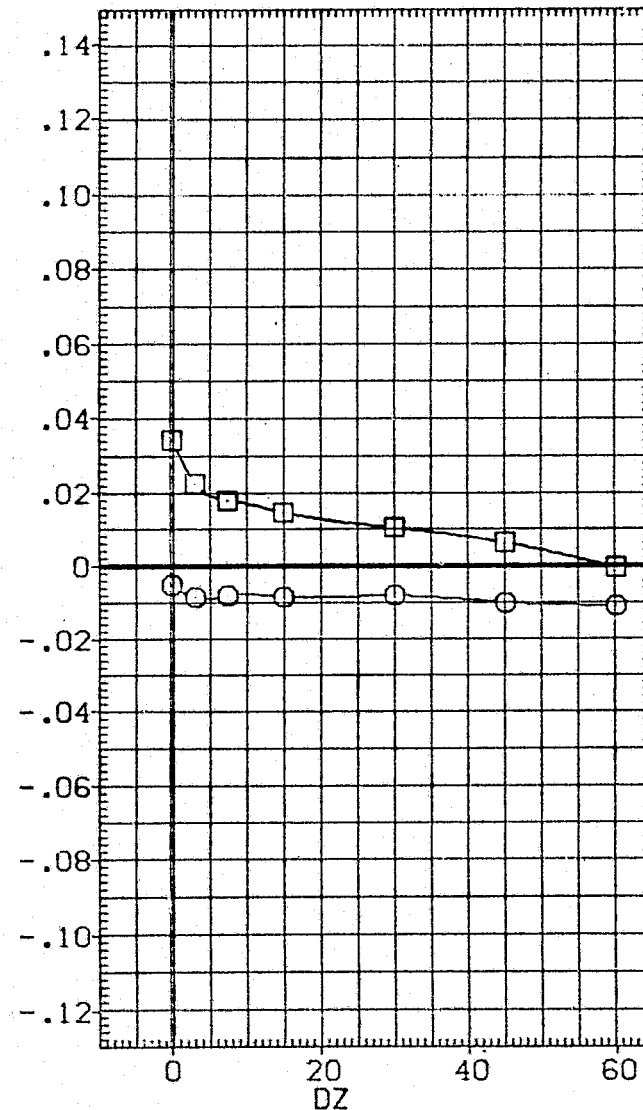
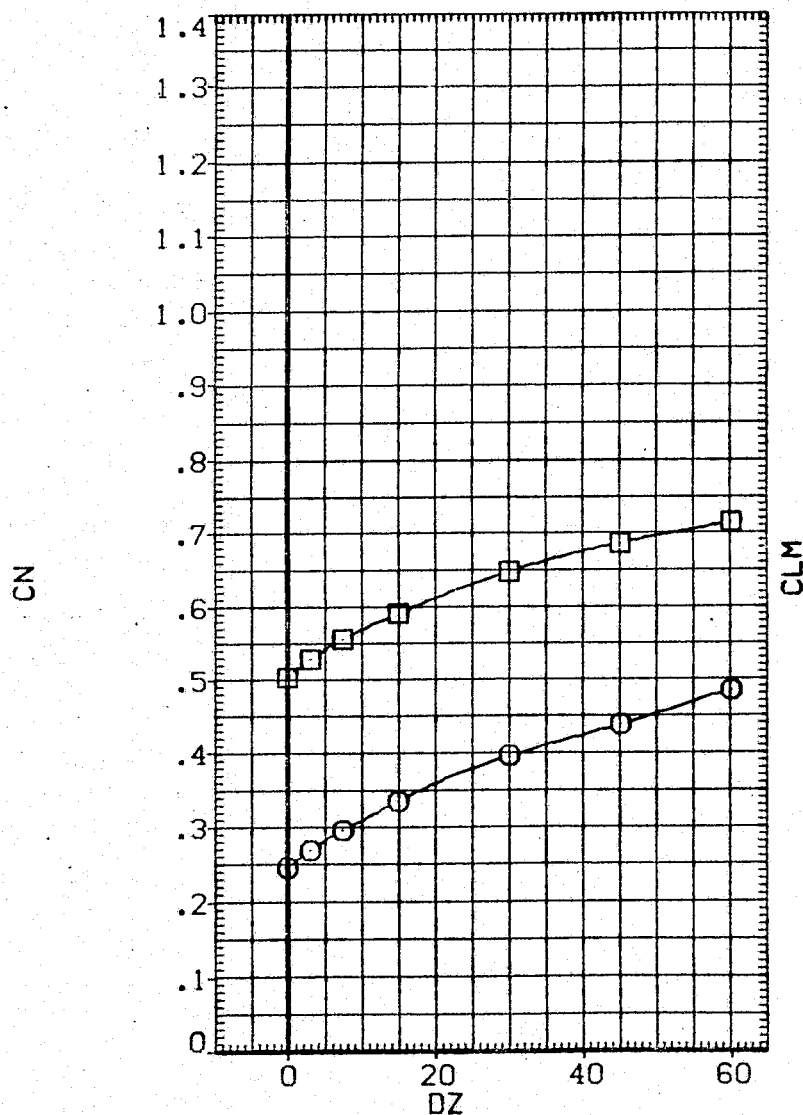


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN114)

SYMBOL

○
□

ALPHA0

10.000

ELV-18

PARAMETRIC VALUES

.000

ELV-08

3.000

14.000

ELEVON

5.000

MACH

.600

PHI

.000

BETA0

-5.000

BETAC

.000

DY

10.000

DX

10.000

ALPHAC

8.000

REFERENCE INFORMATION

SREF 2690.0300

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

AXIAL FORCE COEFFICIENT, CA

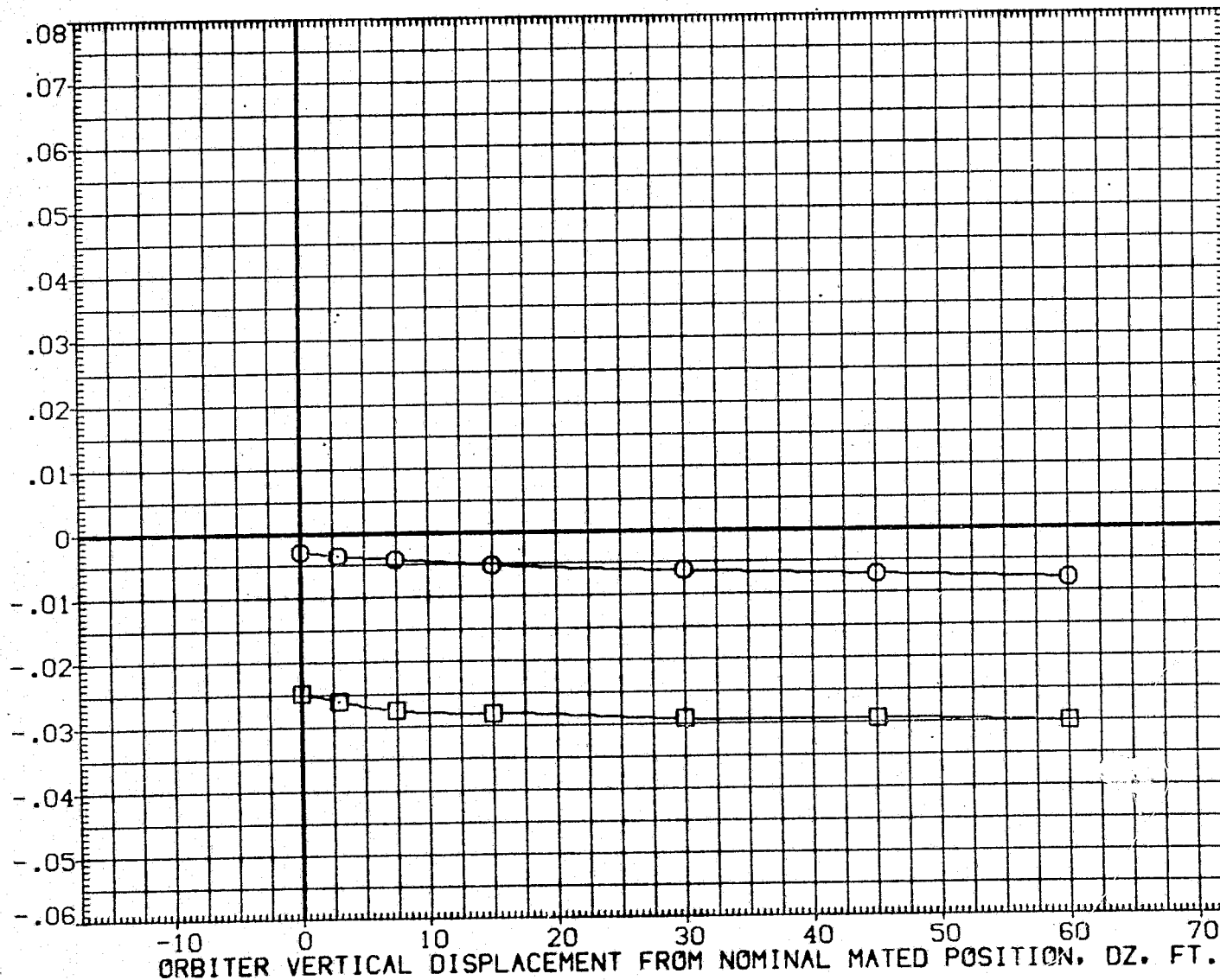


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	.000	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

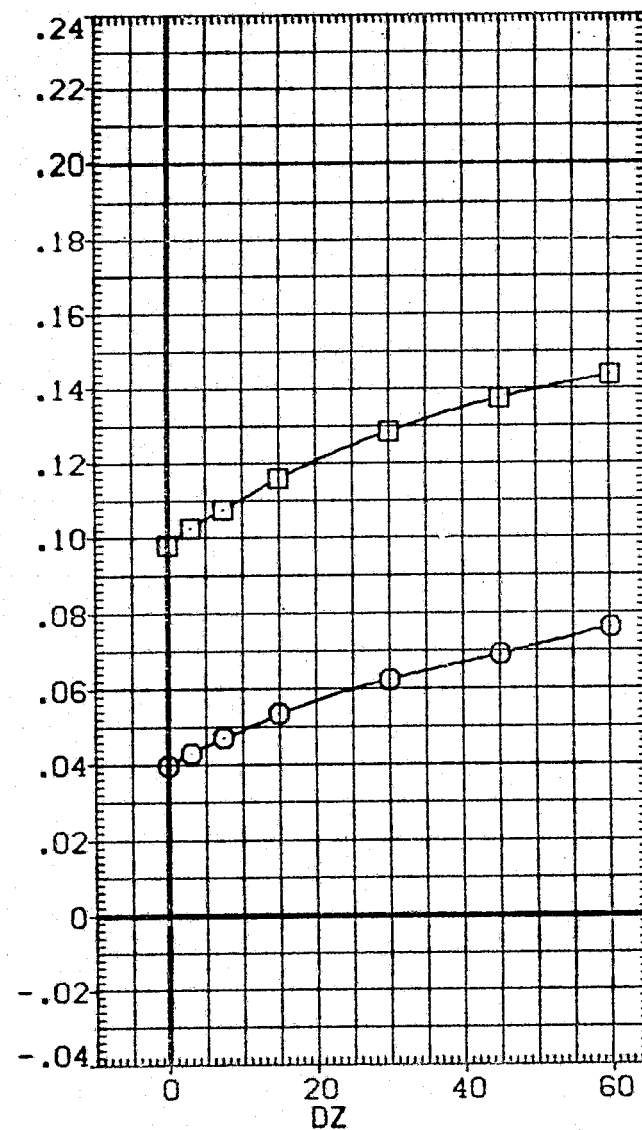
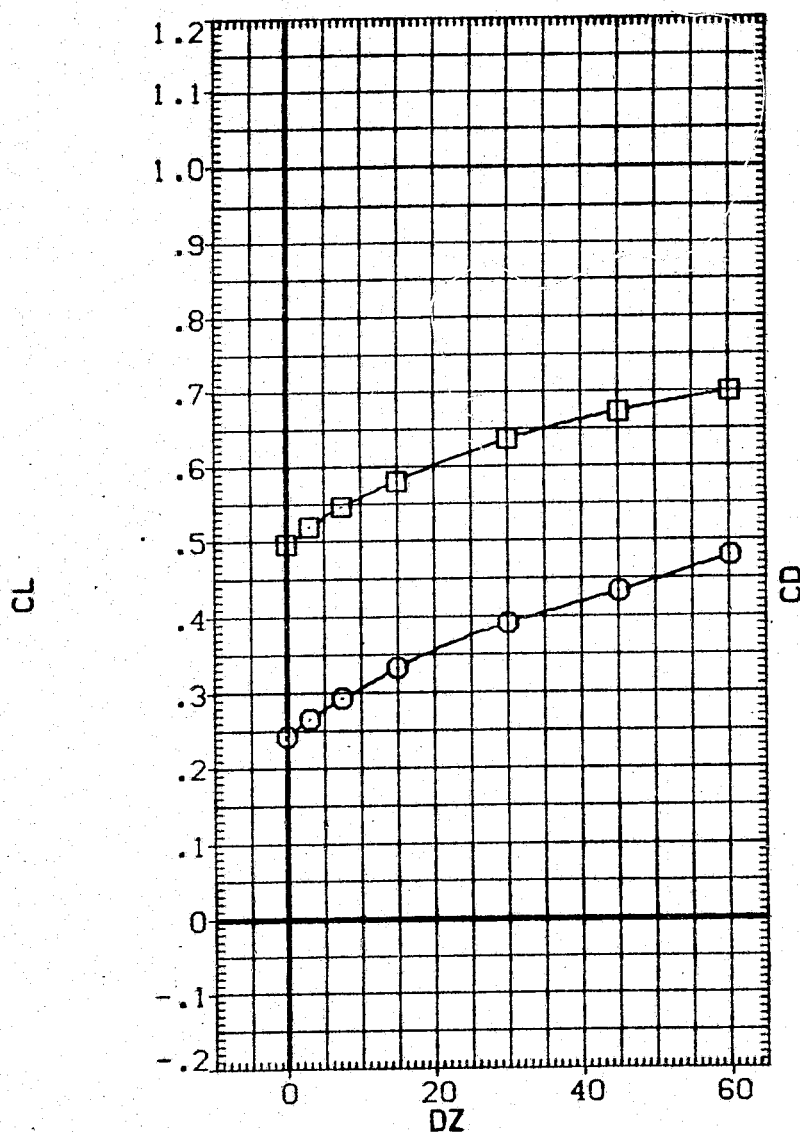


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN114)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI .000 BETA0 -5.000
		BETAC .000 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

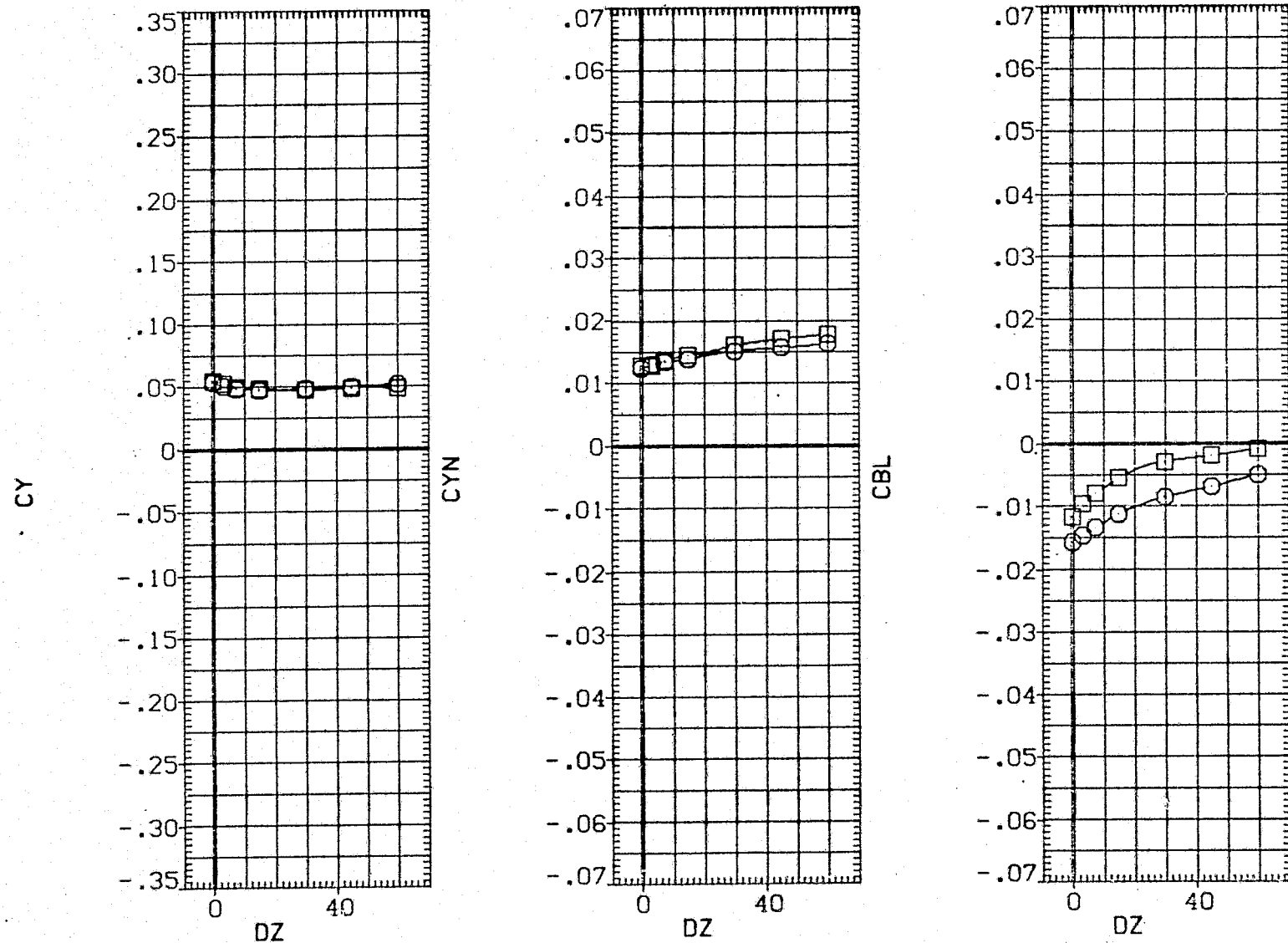


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (114 - 007(VGN114))

SYMBOL

○
□

ALPHA0

10.000

ALPHAC

14.000

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

.000

ELV-0B

3.000

MACH

.600

DX

10.000

BETA0

-5.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

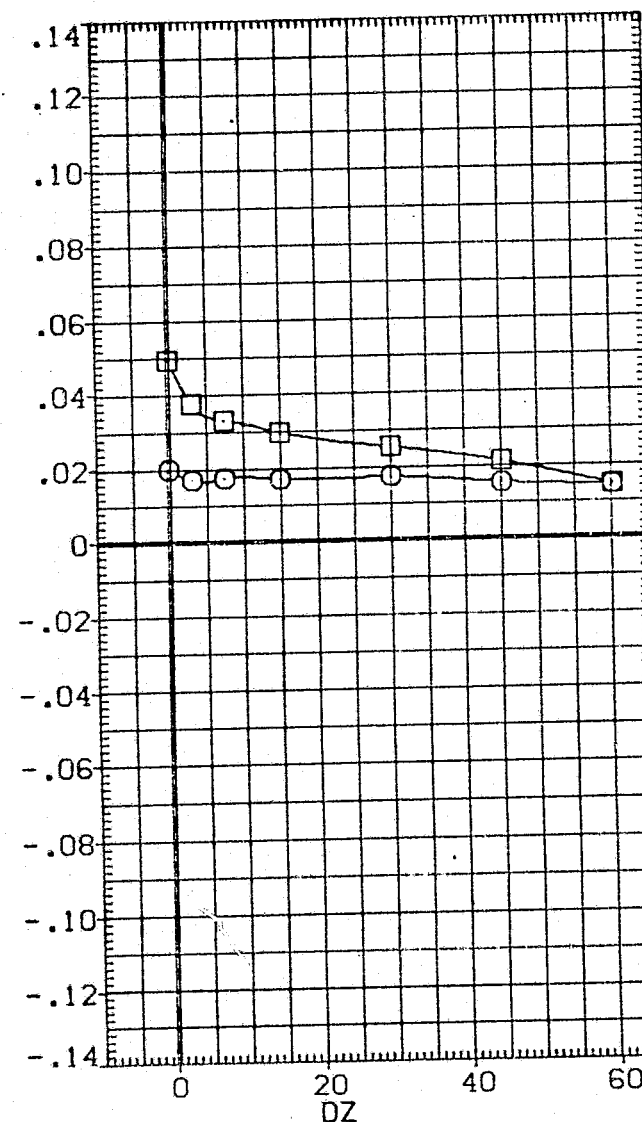
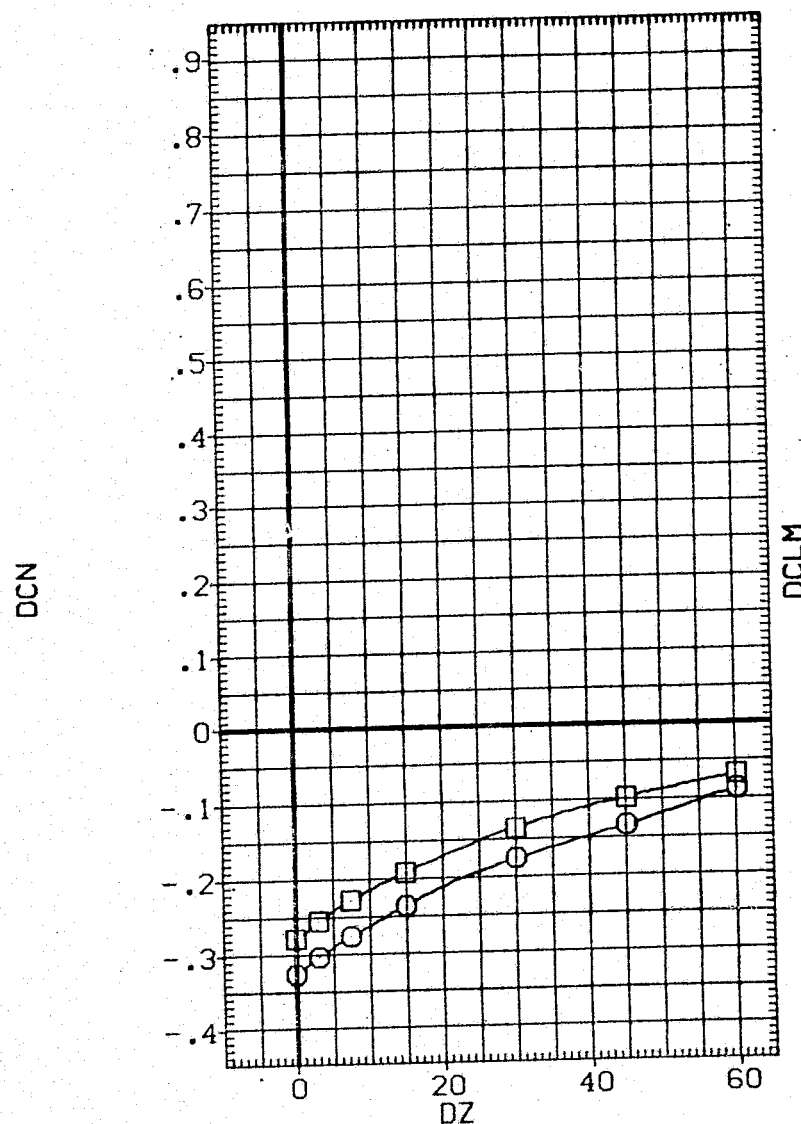


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (114 - 007(VGN114)

SYMBOL	ALPHA0		PARAMETRIC VALUES				REFERENCE INFORMATION		
	10.000	ALPHAC	8.000	BETAC	.000		SREF	2690.0000	50.FT.
○	14.000	ELV-1B	.000	ELV-0B	3.000		LREF	374.8100	IN.
□		ELEVON	5.000	MACH	.600		BREF	936.6800	IN.
		PHI	.000	DX	10.000		XMRP	1109.0000	IN.X0
		DY	10.000	BETA0	-5.000		YMRP	.0000	IN.Y0
							ZMRP	375.0000	IN.Z0
							SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

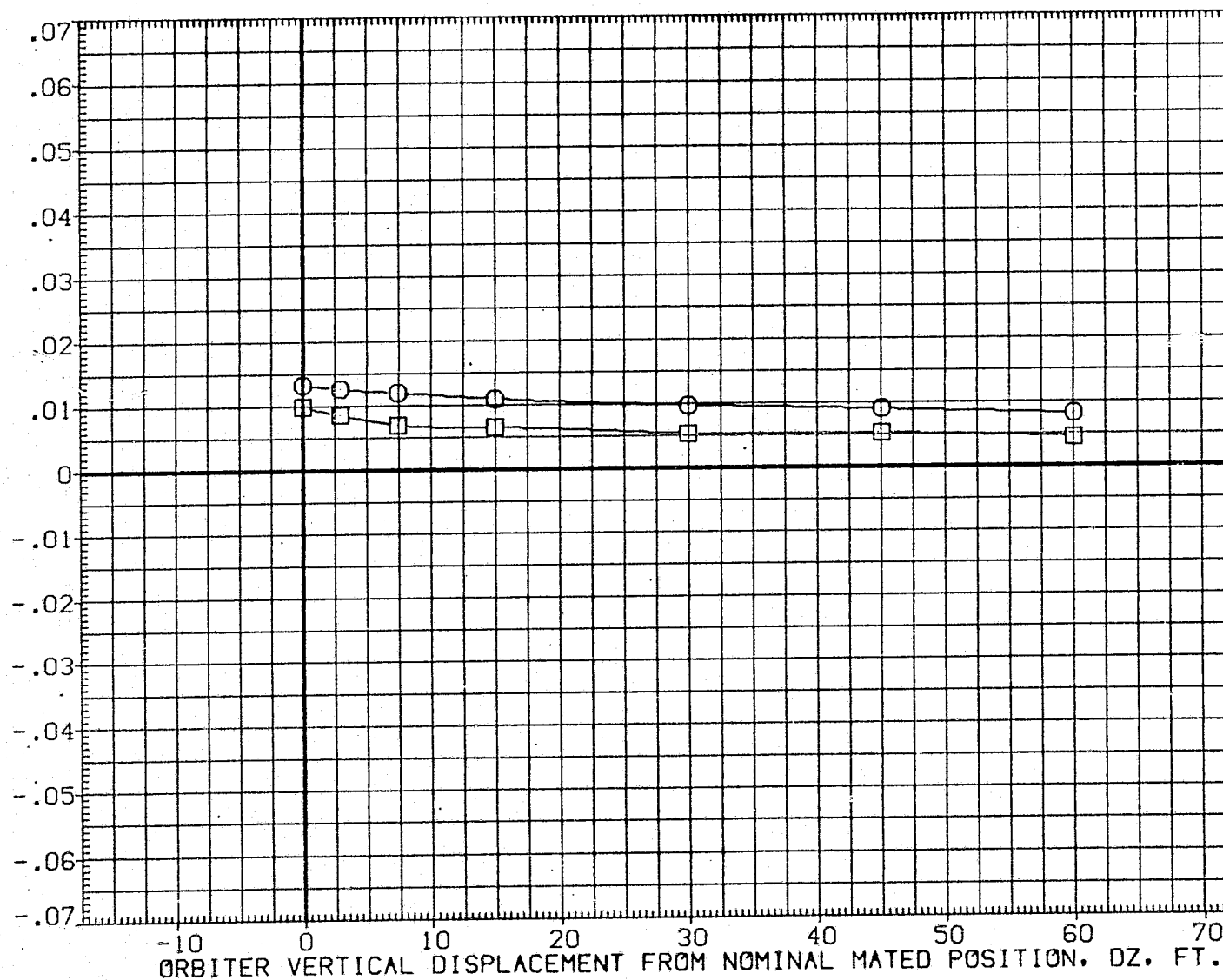


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

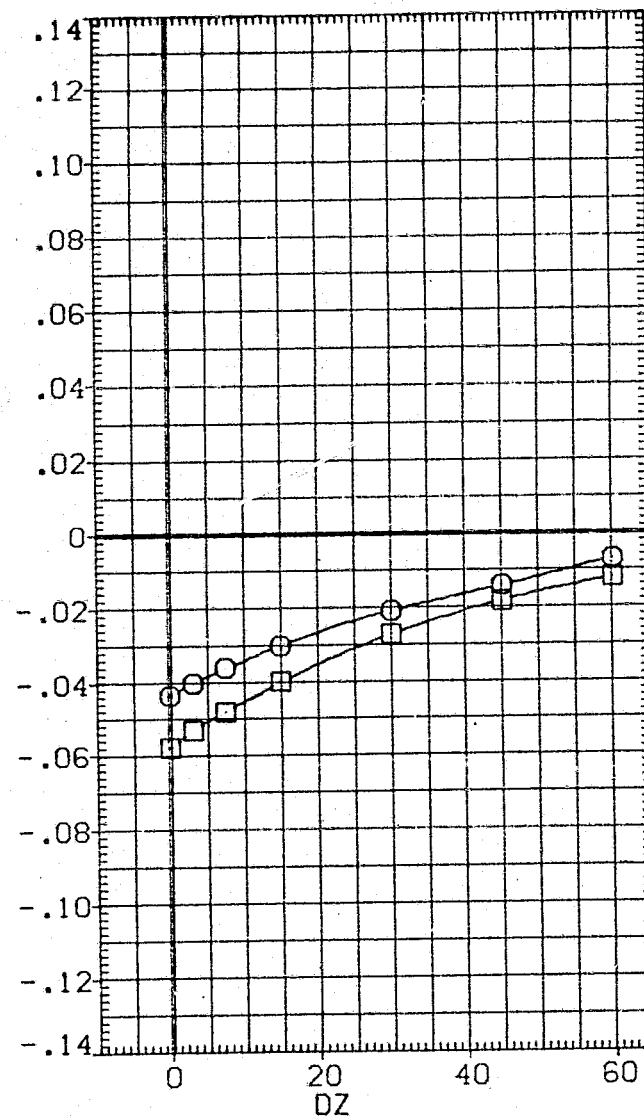
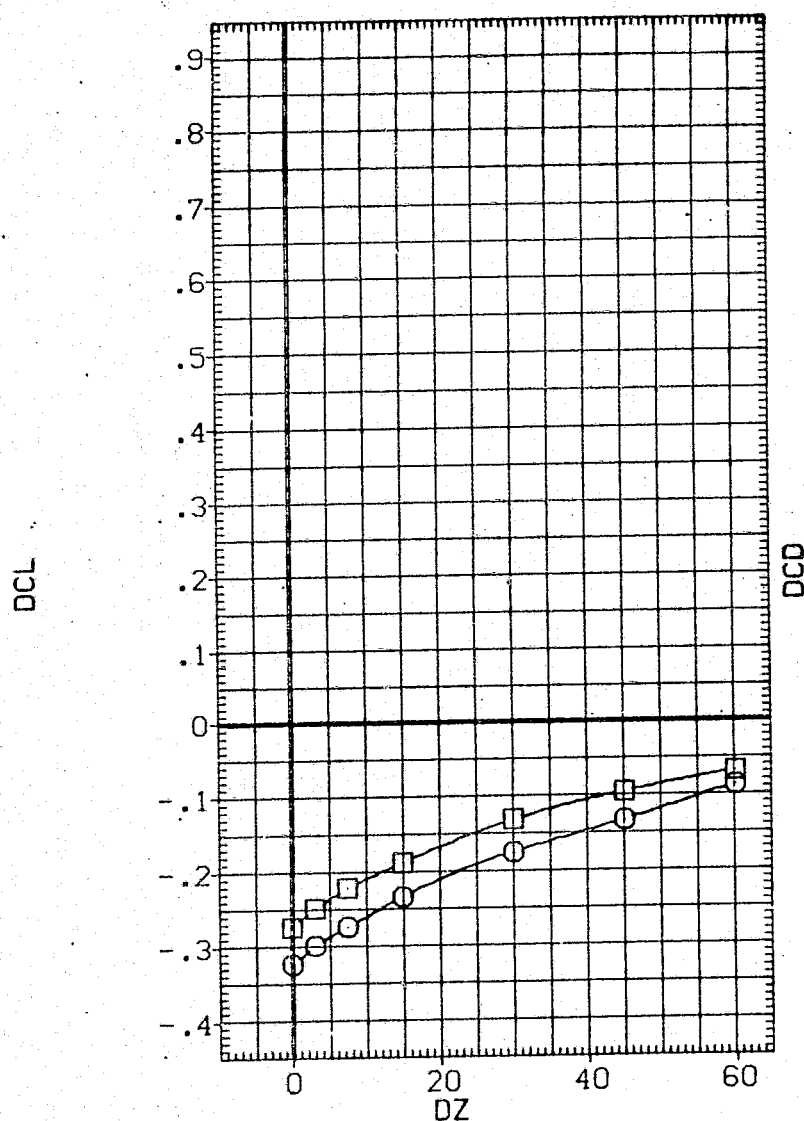


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN115)

SYMBOL	ALPHA0	PARAMETRIC VALUES	ELV-OB	3.000
○	10.000	ELV-IB .000	MACH	.600
□	14.000	ELEVON 5.000	BETA0	-5.000
		PHI .000	DY	.000
		BETAC 5.000	ALPHAC	4.000
		DX 10.000		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

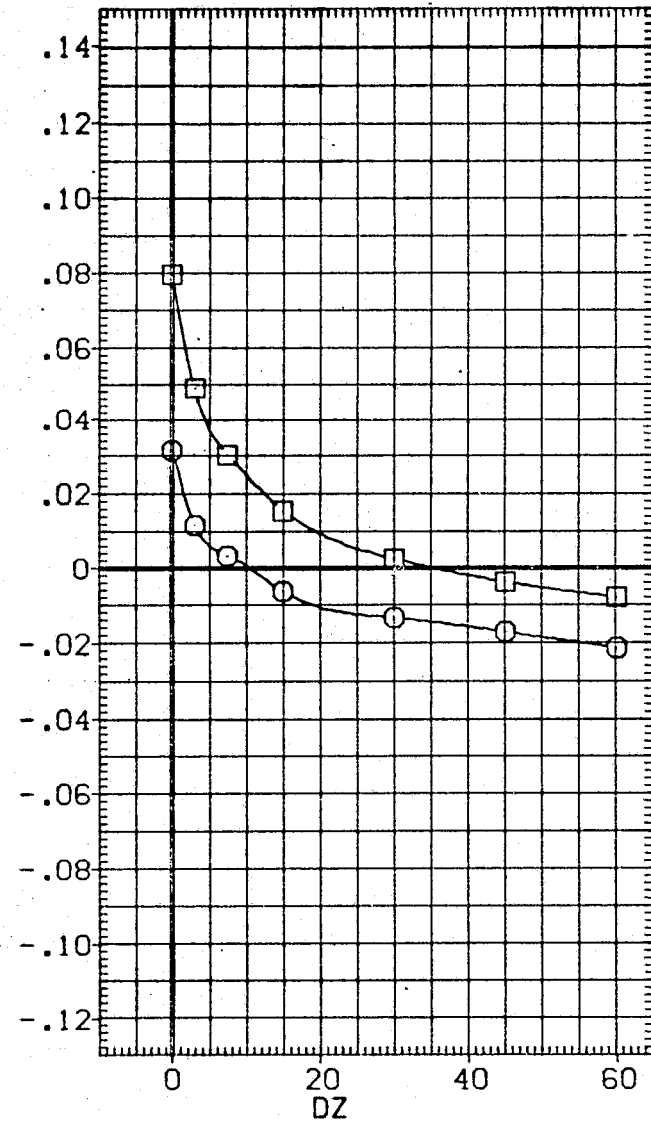
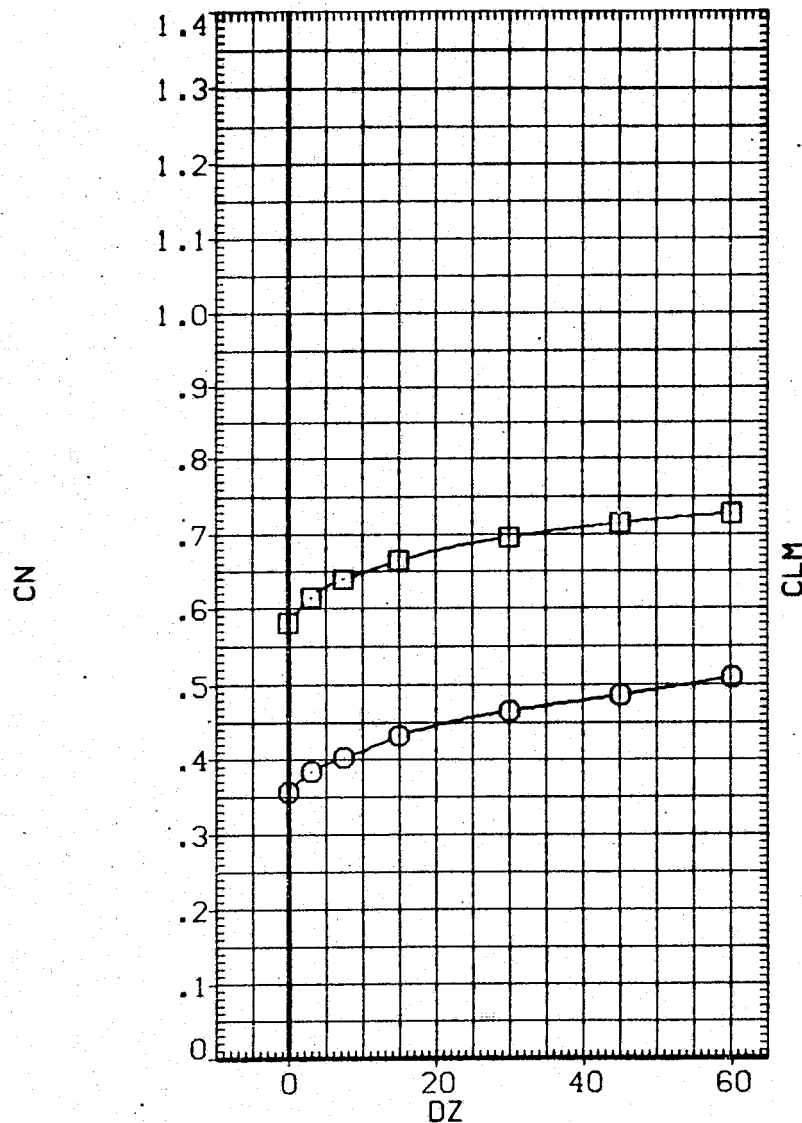


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI .000 BETA0 -5.000
		BETAC 5.000 DY .000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

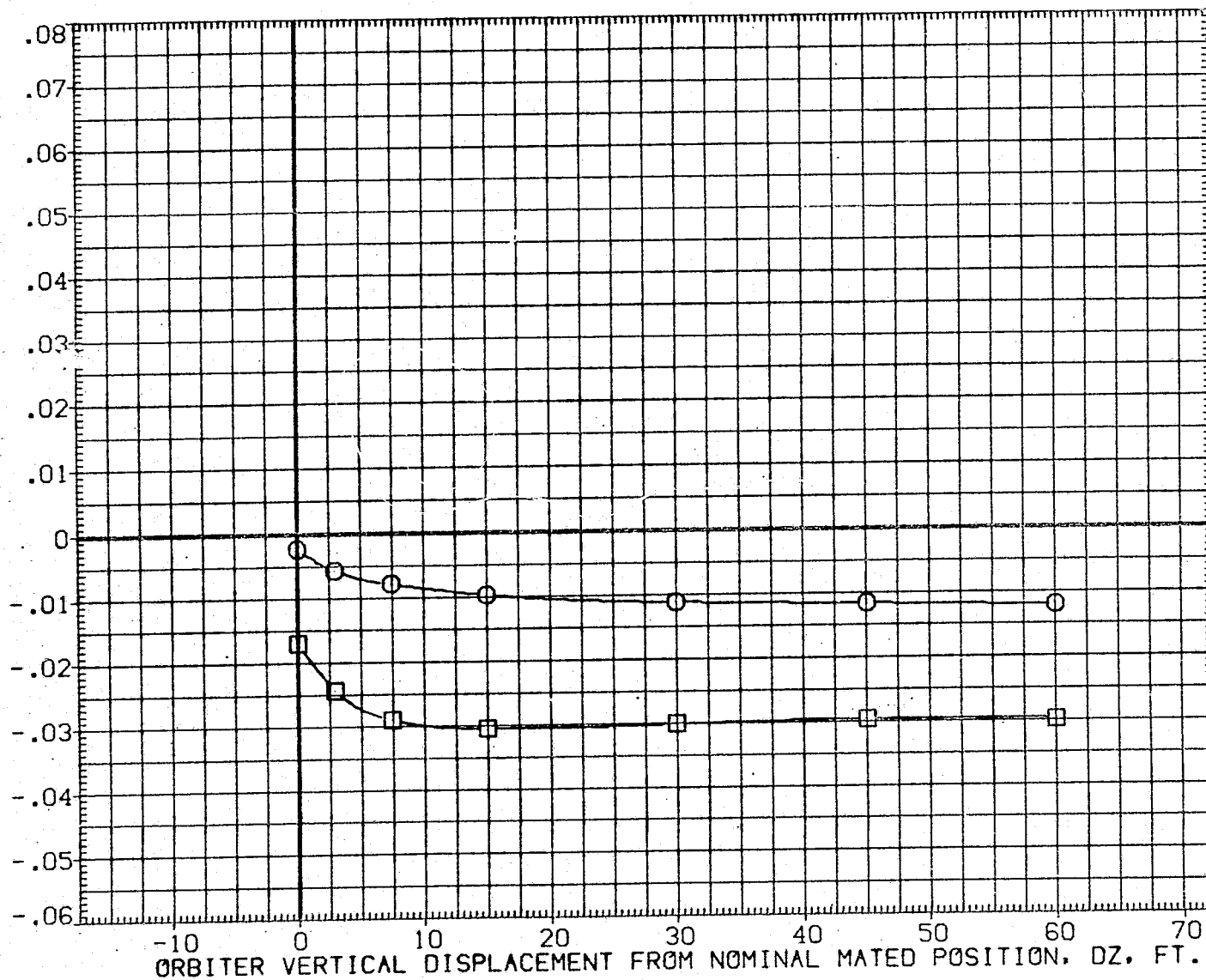


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN115)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	.000	MACH	3.000
□	14.000	5.000	BETA0	.600
		.000	DY	-5.000
		5.000	ALPHAC	.000
		10.000		4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

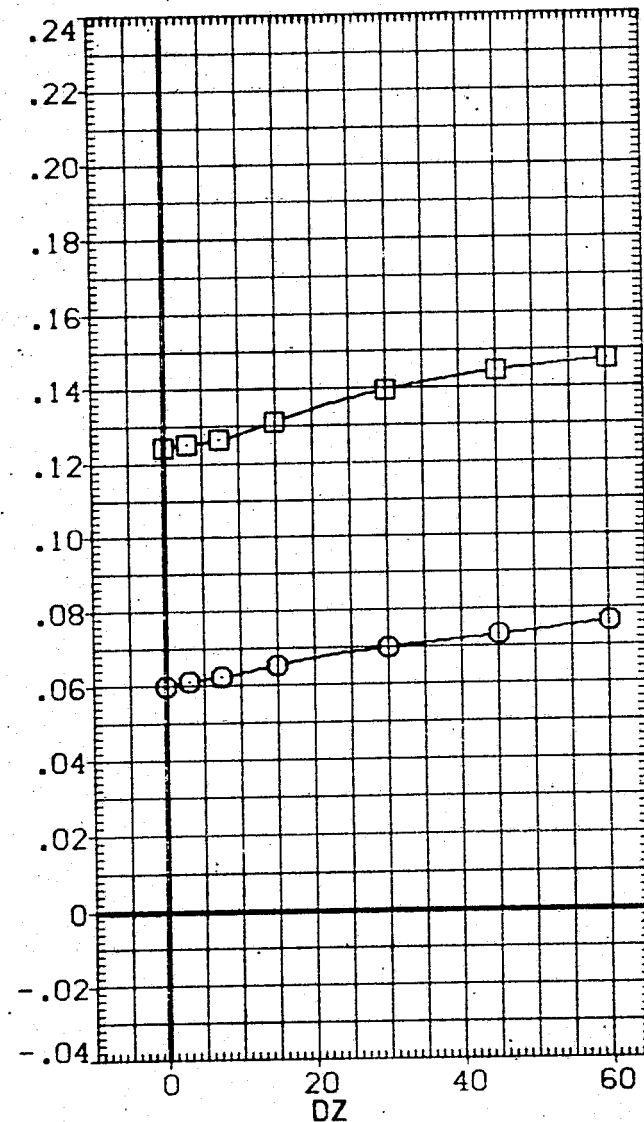
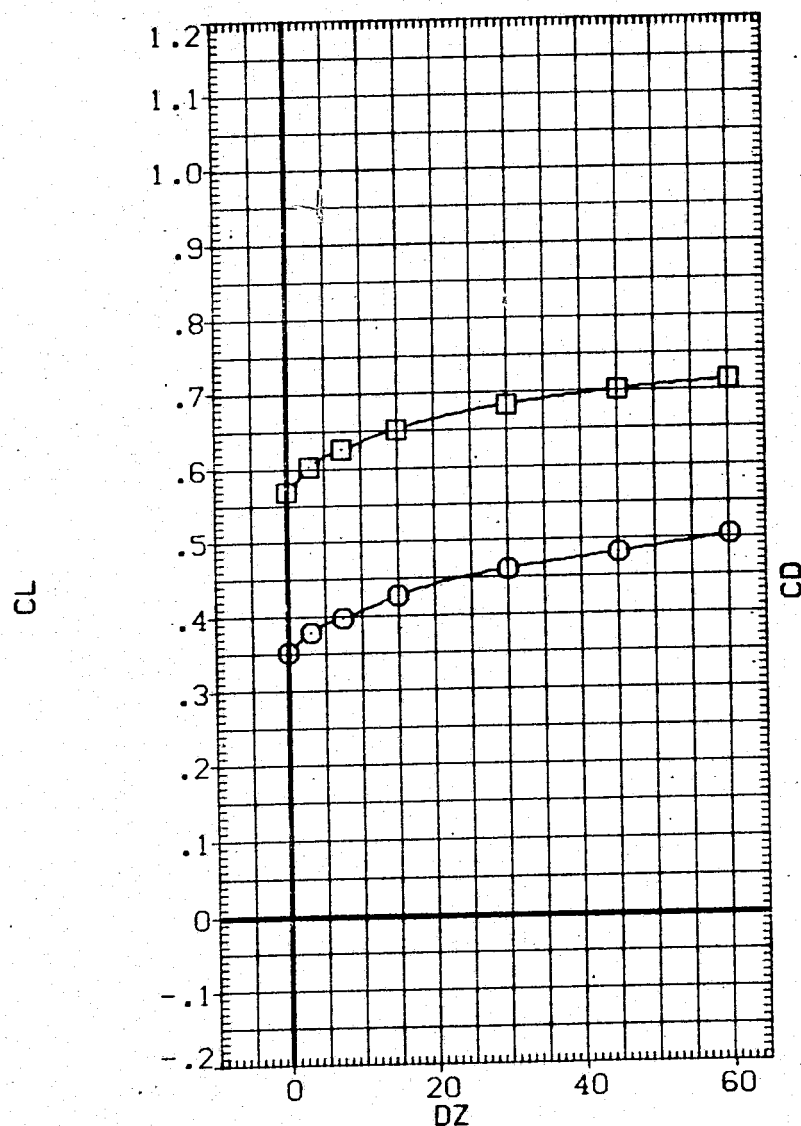


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN115)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	5.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

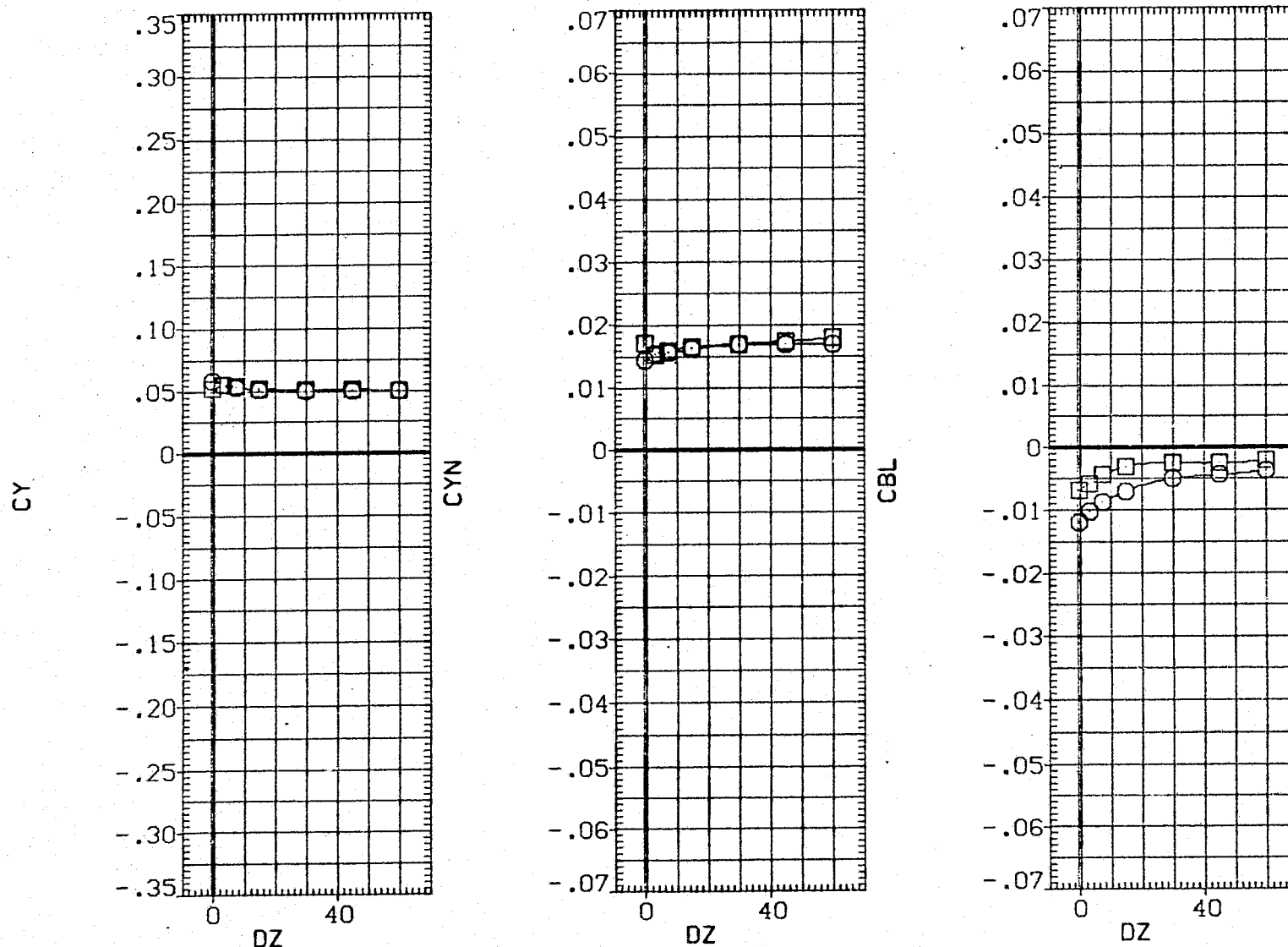


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (115 - 007) (VGN115)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	-4.000	BETAC	5.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

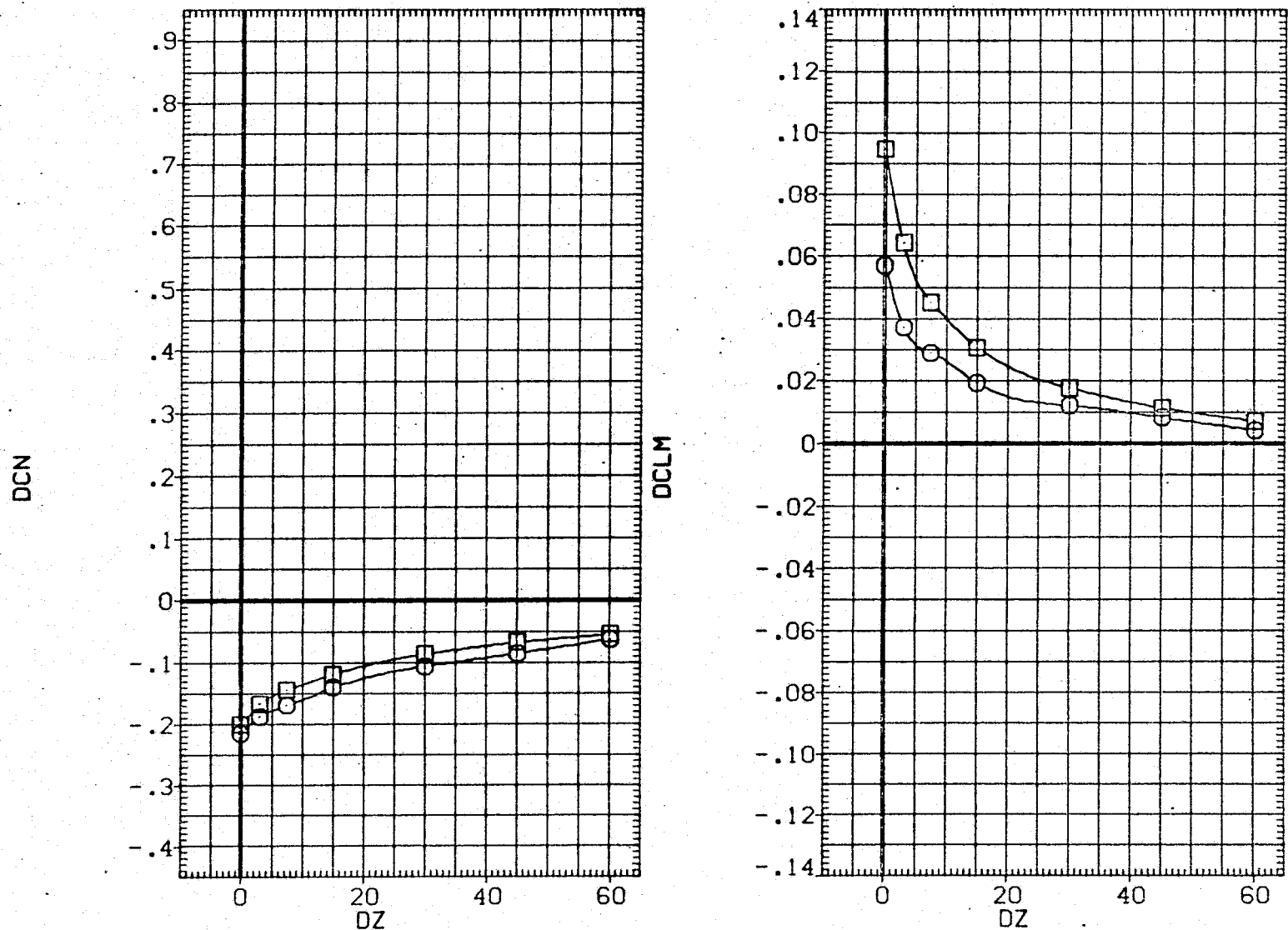


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

5.000

3.000

.600

10.000

-5.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

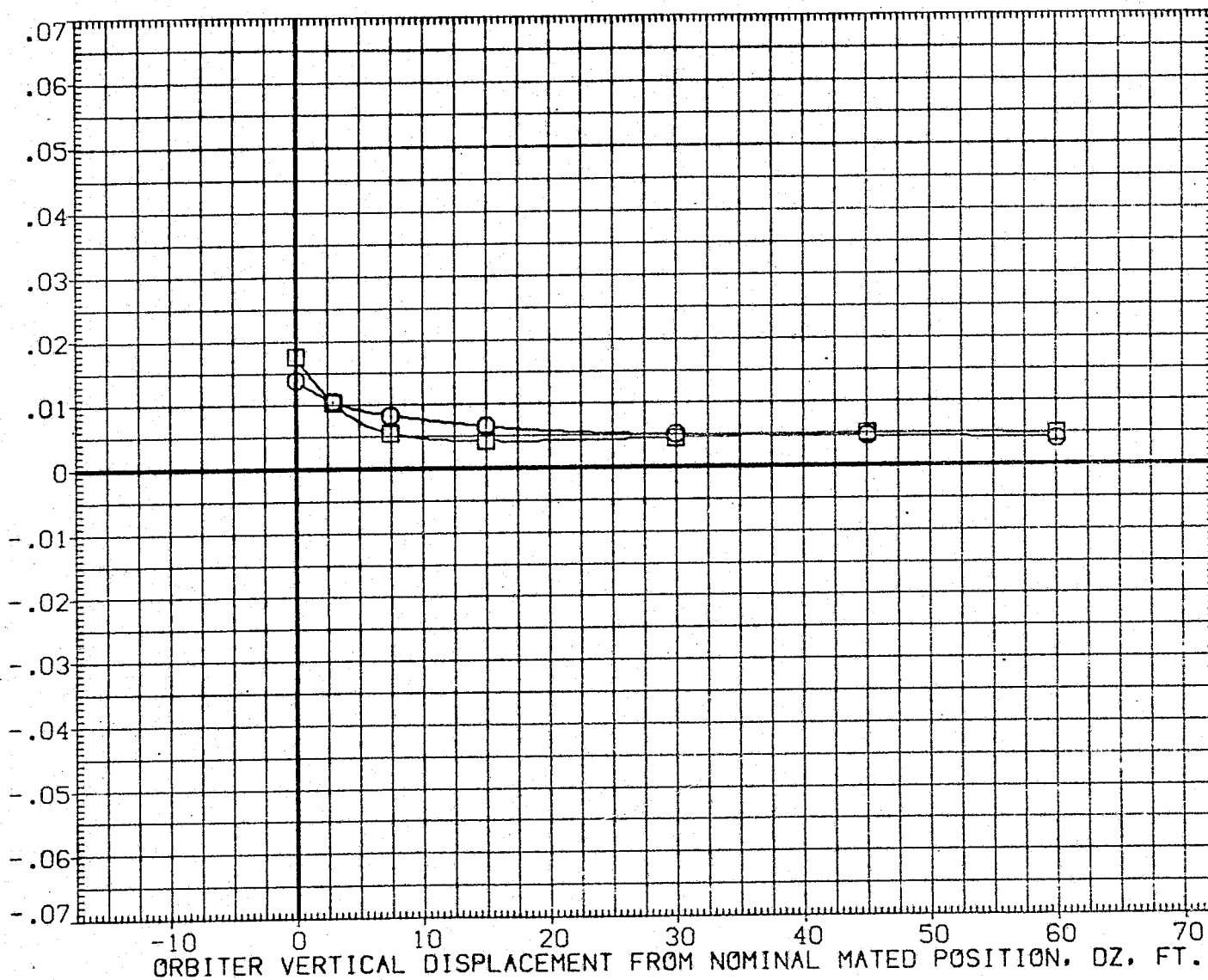


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (115 - 007)(VGN115)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

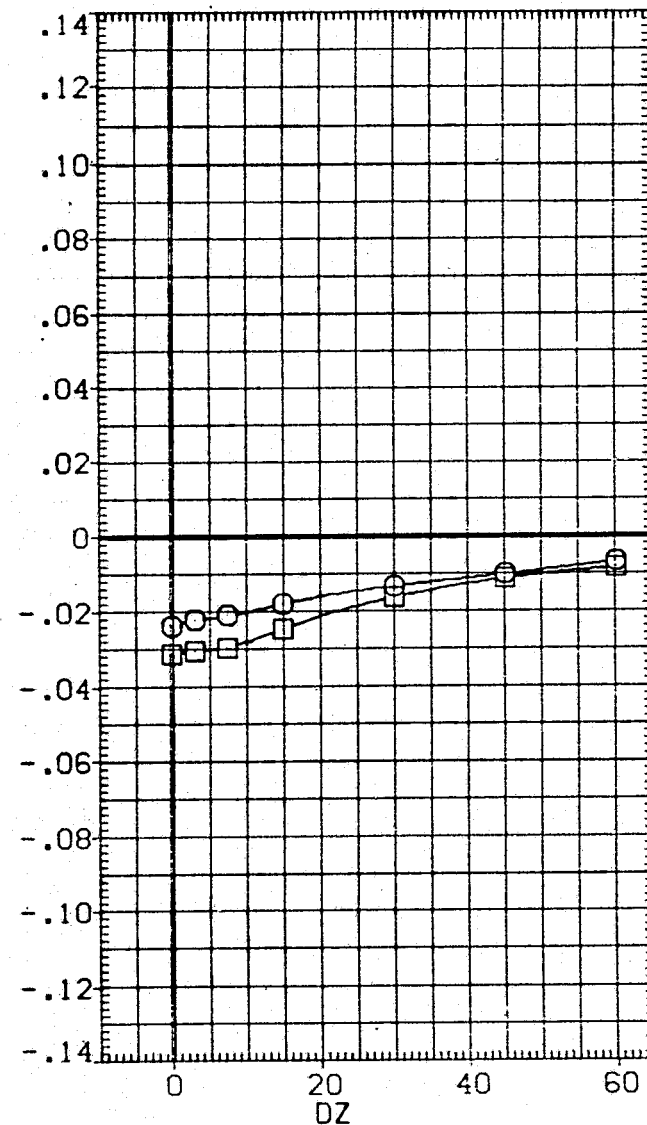
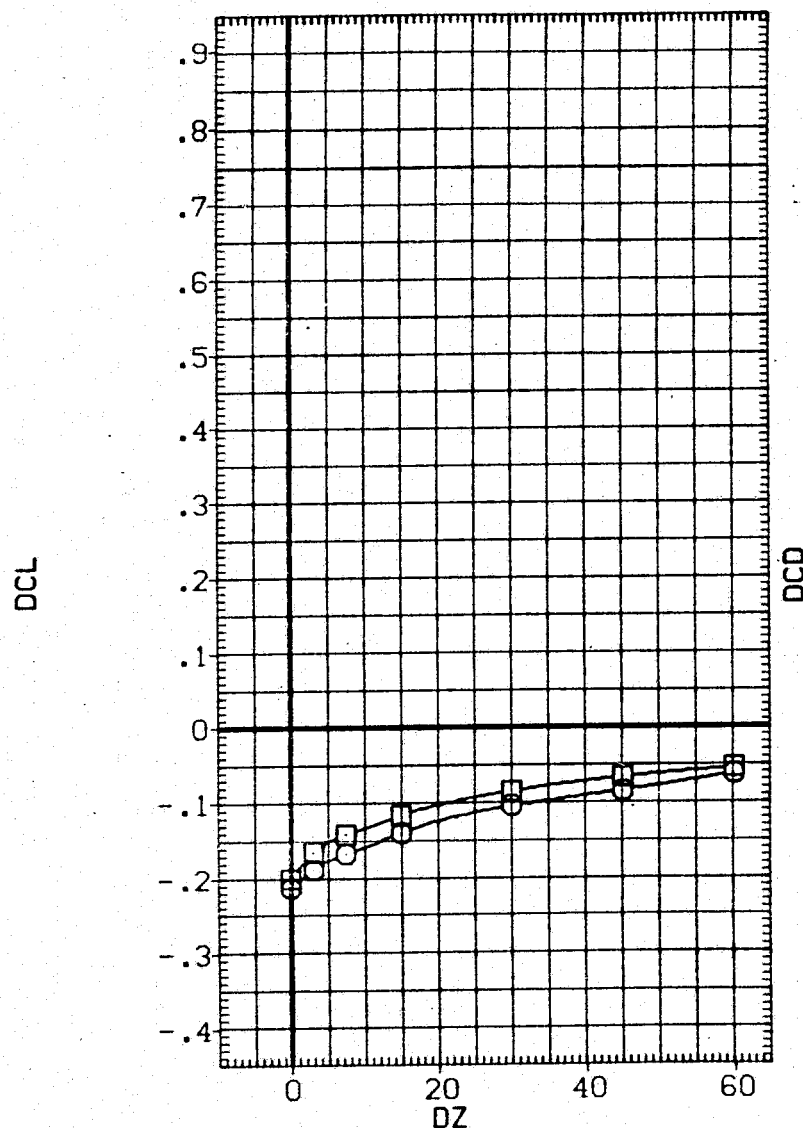


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	5.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

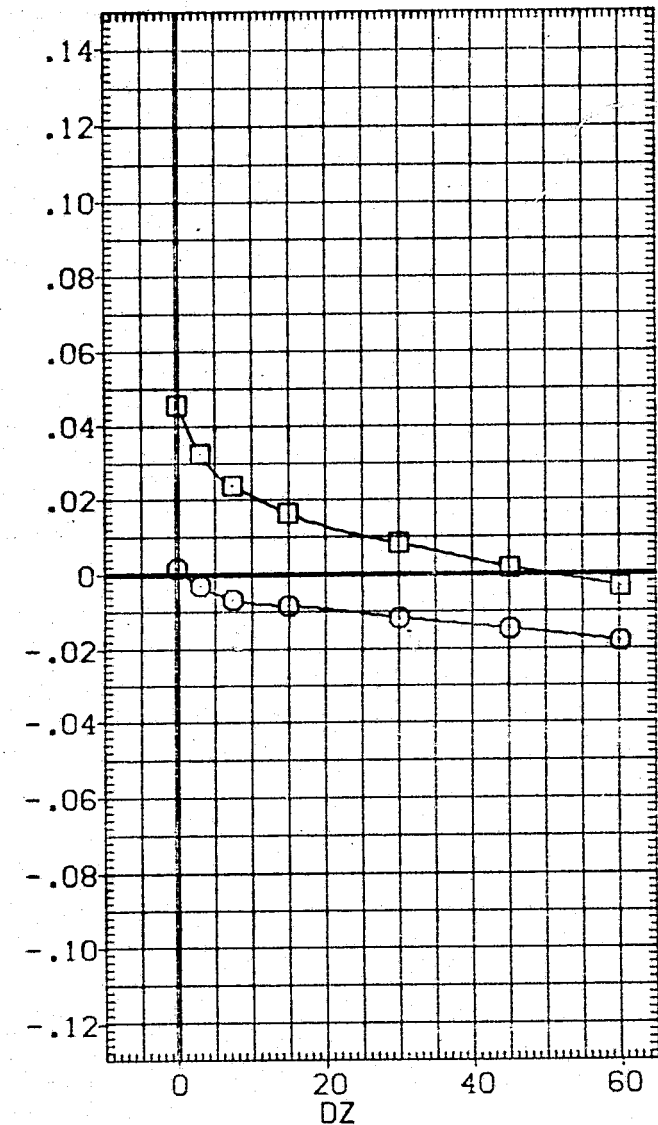
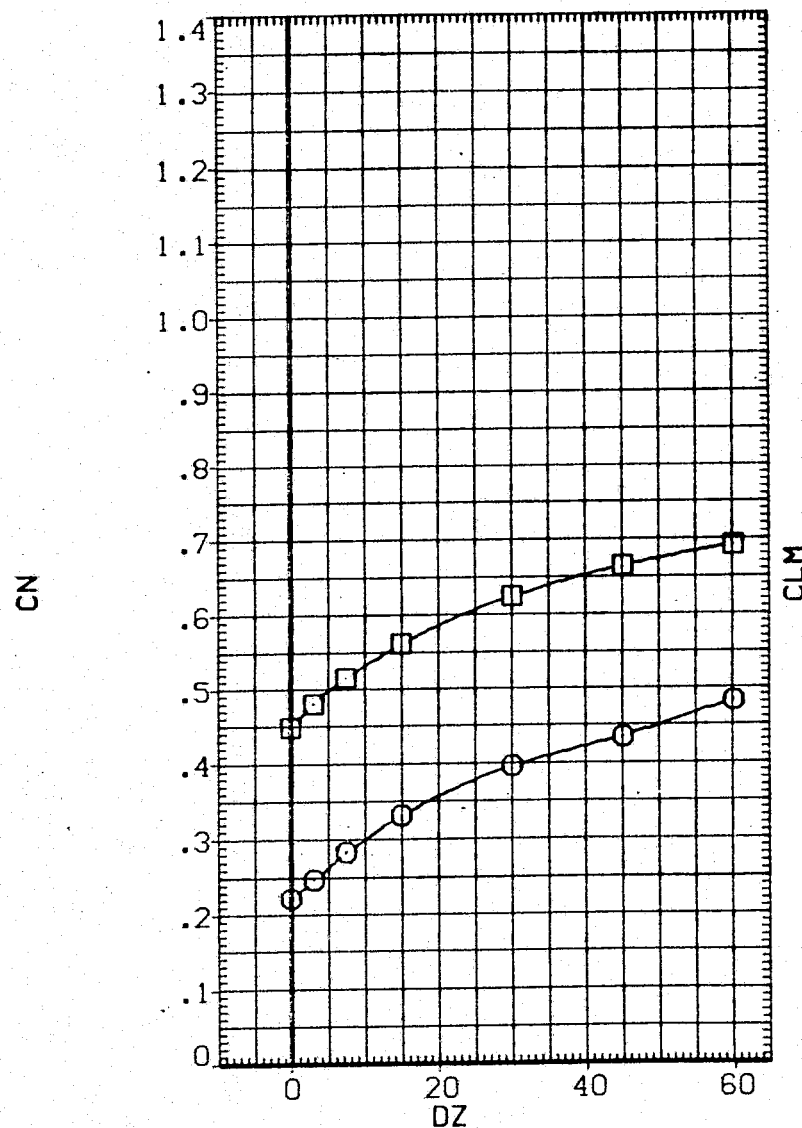


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20. 747/1 01 S1

ORBITER DATA (NGN116)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	5.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

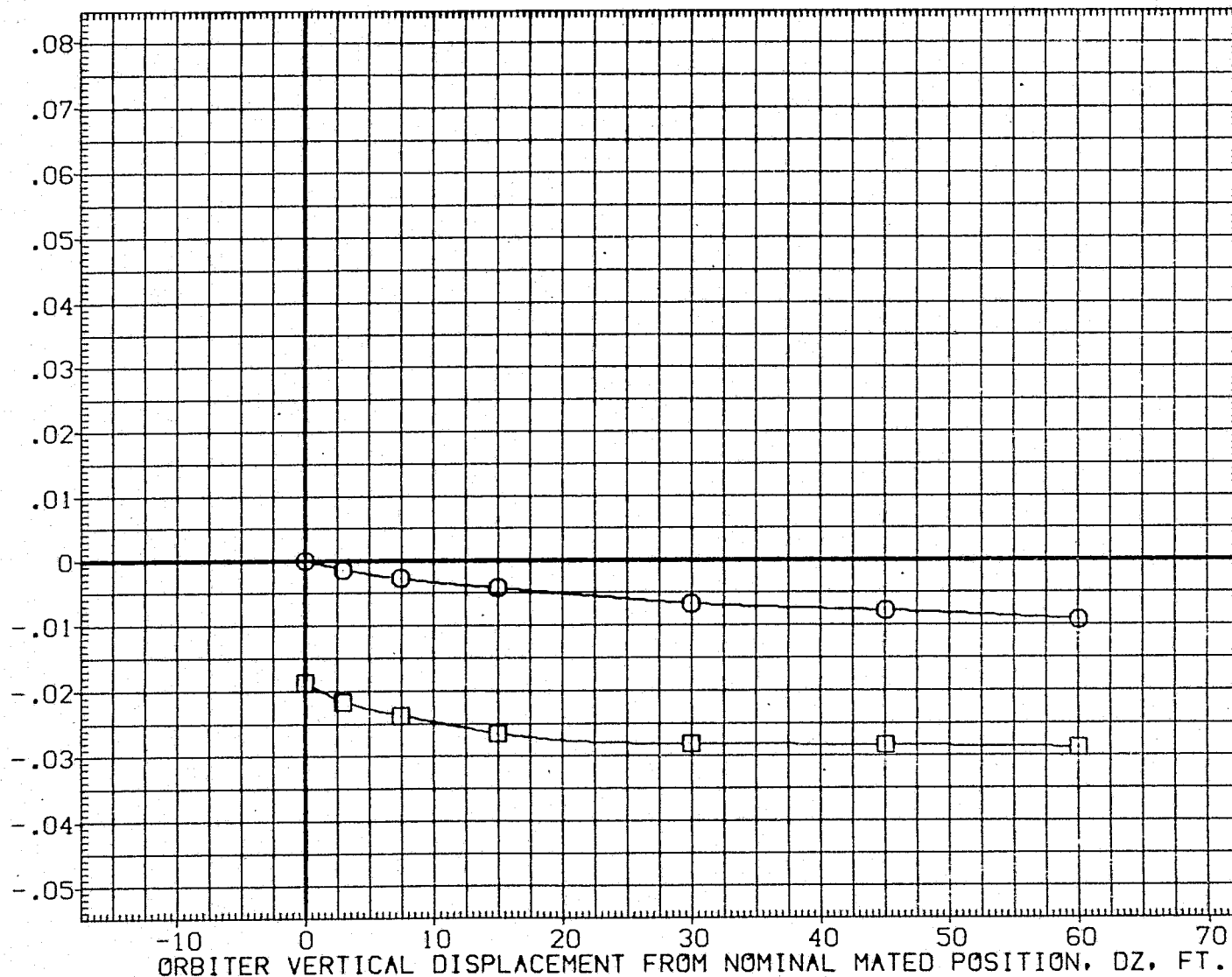


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	ELV-1B	.000	ELV-0B	3.000	
○	14.000	ELEVON	5.000	MACH	.600	
□		PHI	.000	BETA0	-5.000	
		BETAC	5.000	DY	.000	
		DX	10.000	ALPHAC	8.000	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

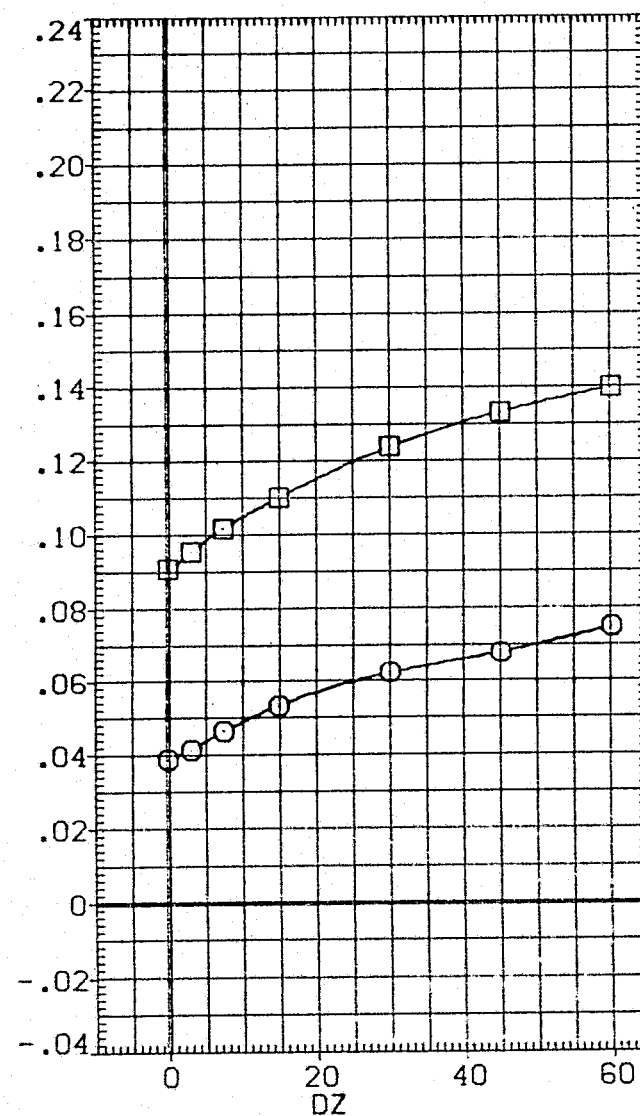
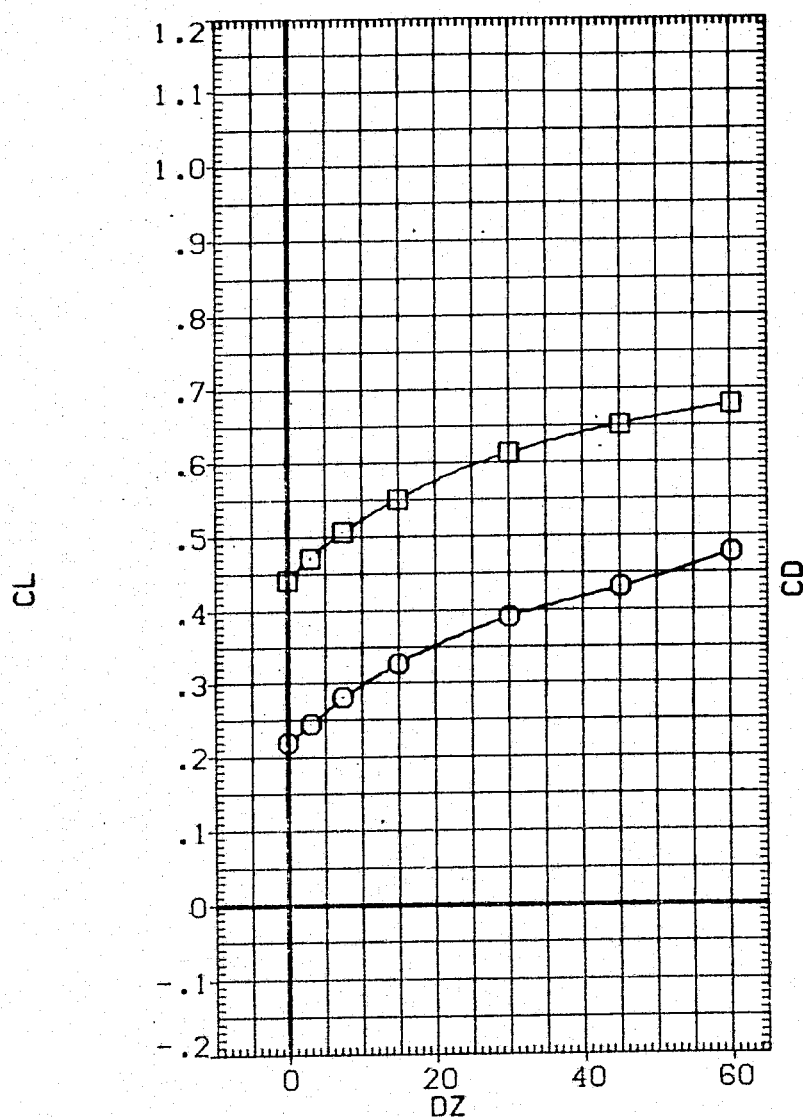


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN116)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	5.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

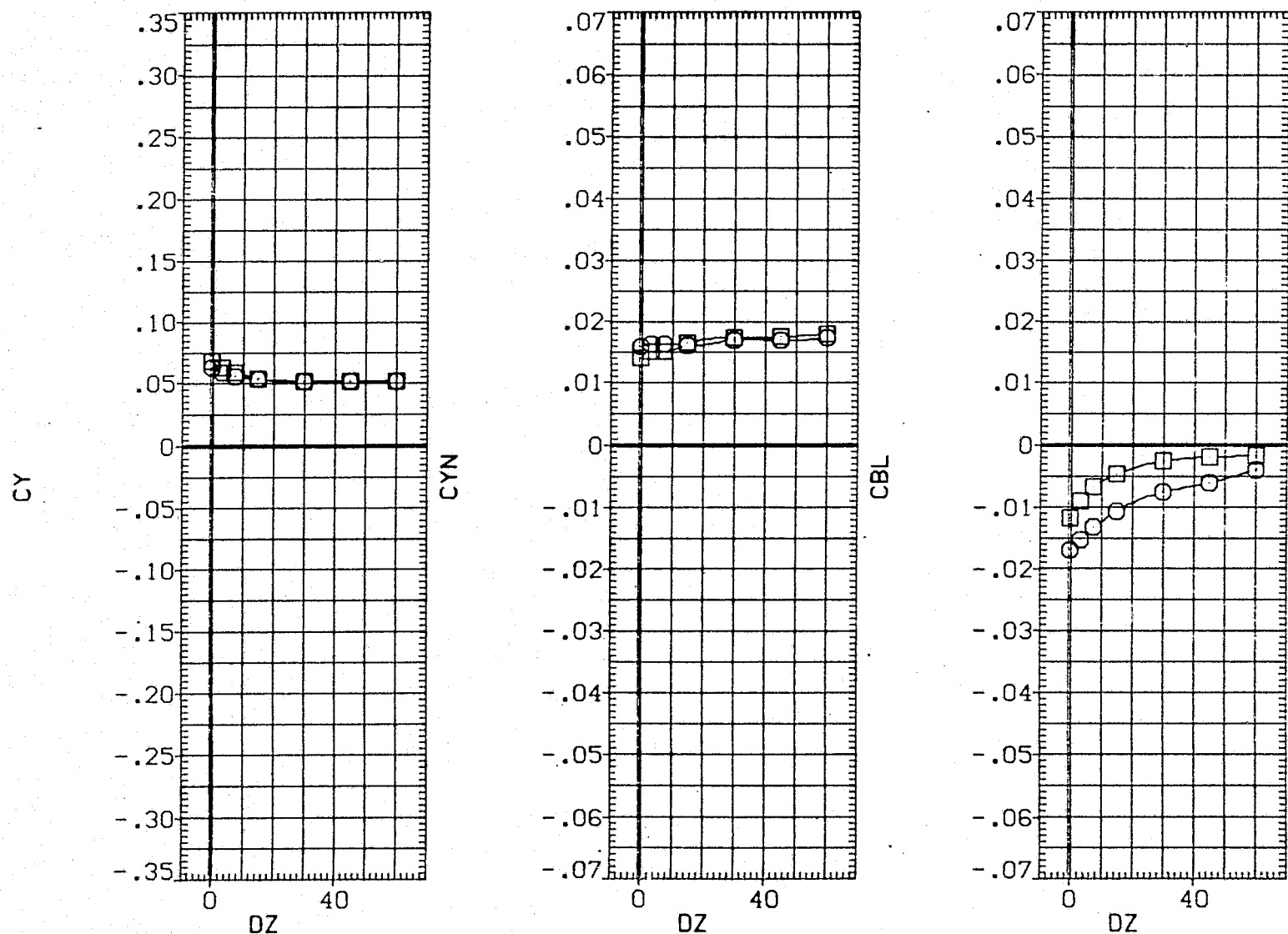


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC 5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

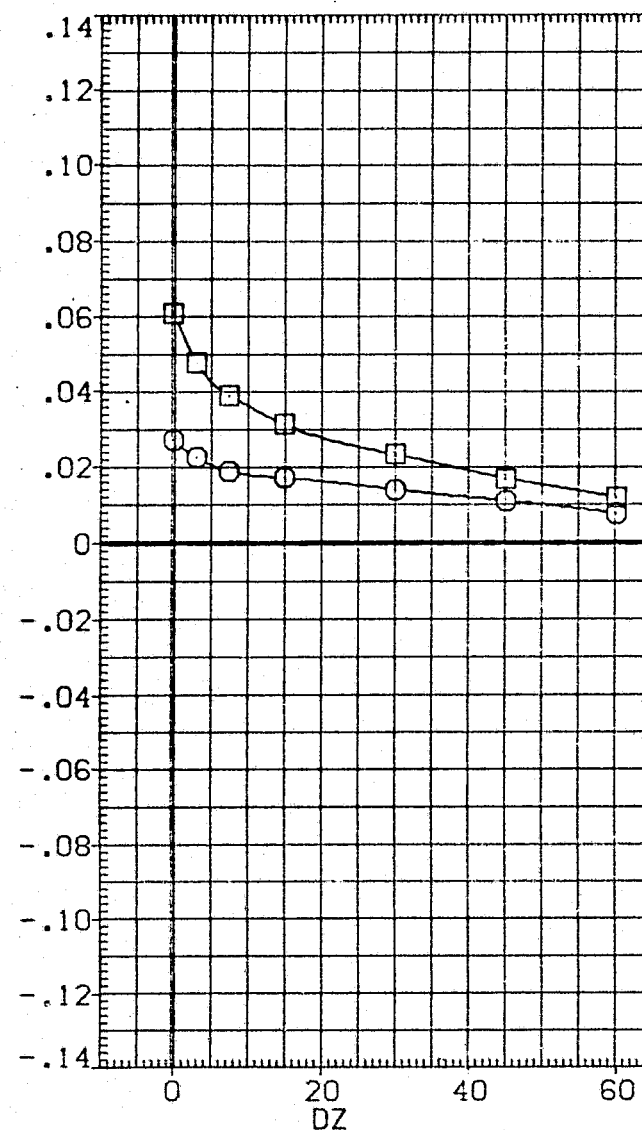
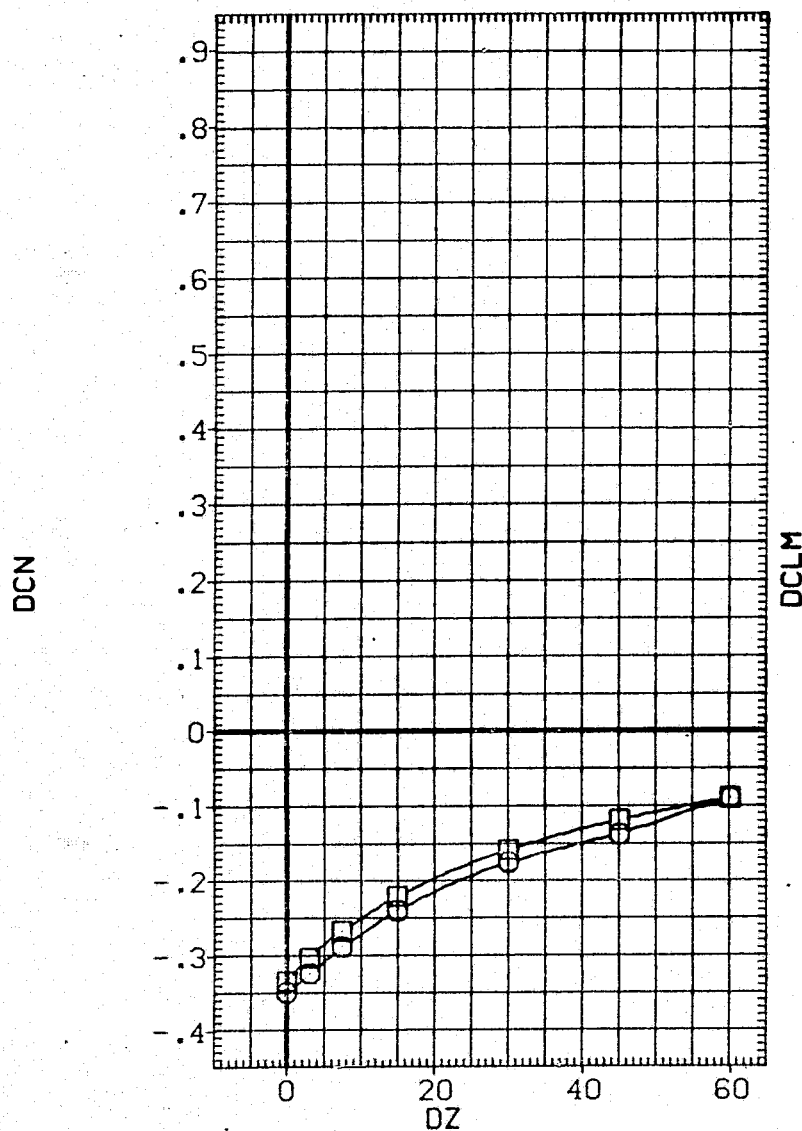


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (116 - 007)(VGN116)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

8.000

BETAC

5.000

ELV-IB

.000

ELV-OB

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

10.000

DY

.000

BETA0

-5.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

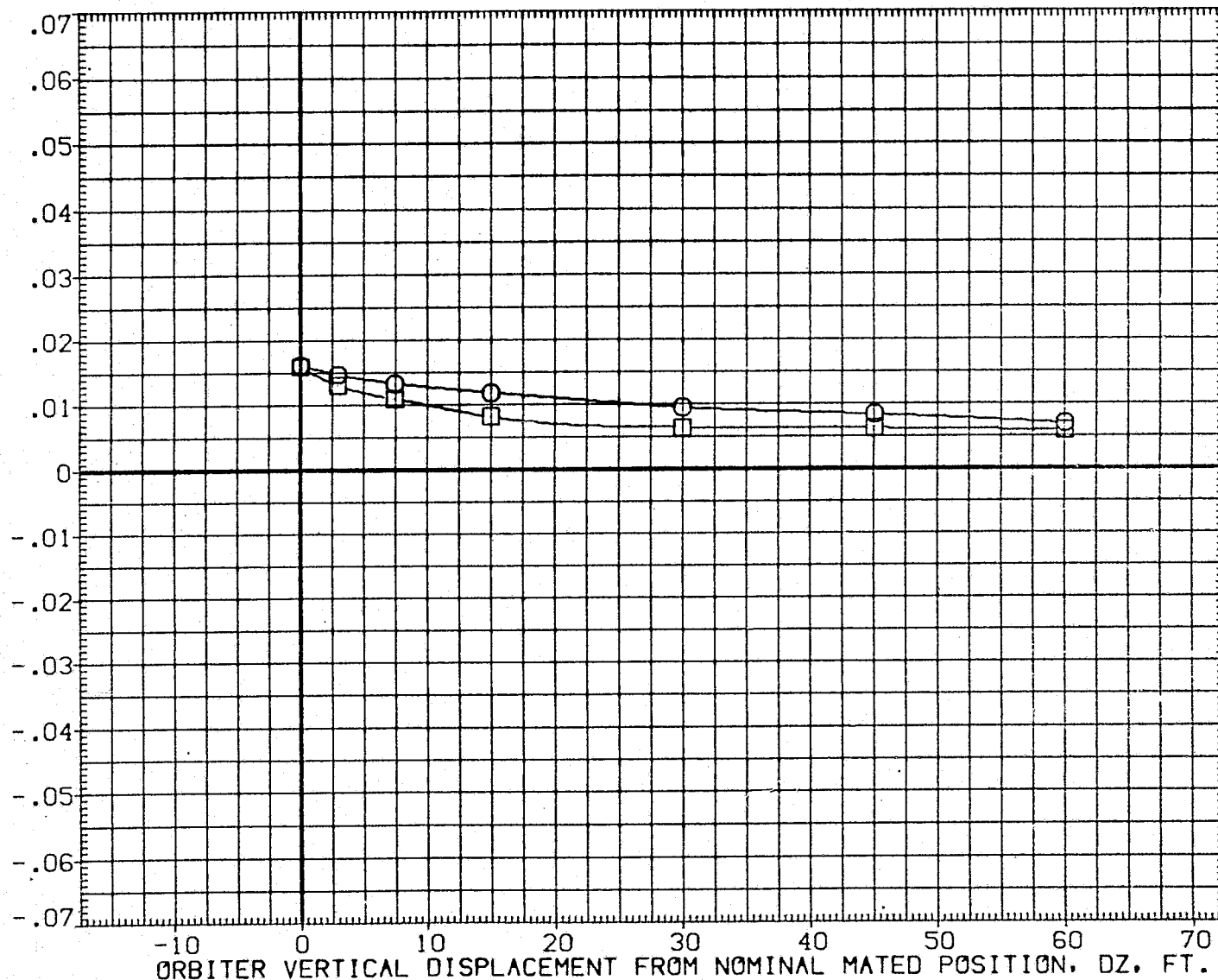


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000
14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

ELV-08

MACH

DX

BETA0

5.000

3.000

.600

10.000

-5.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

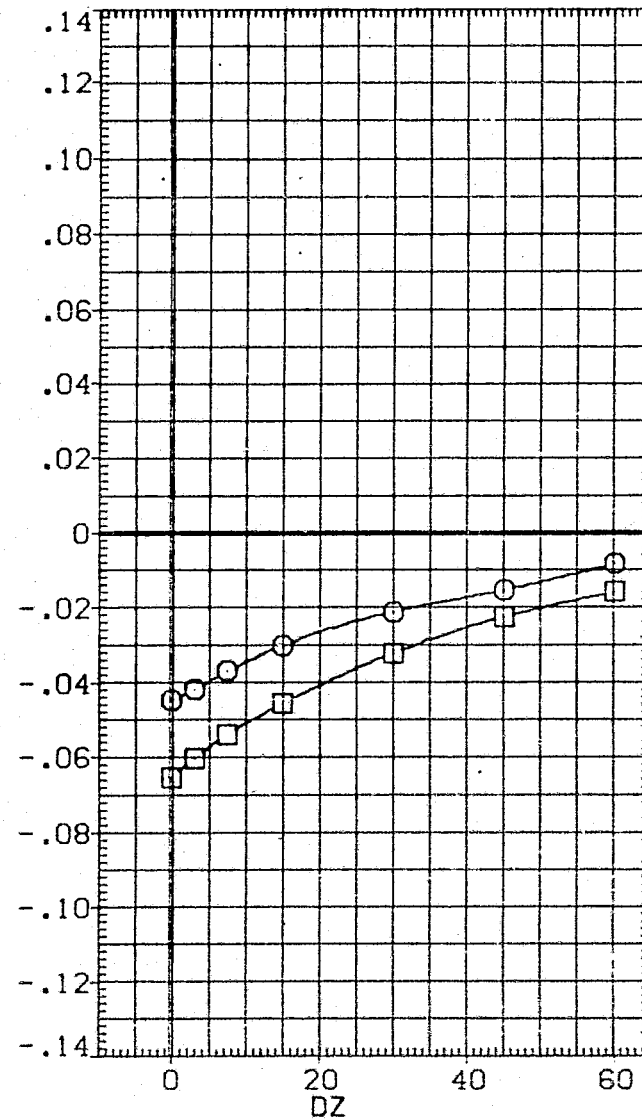
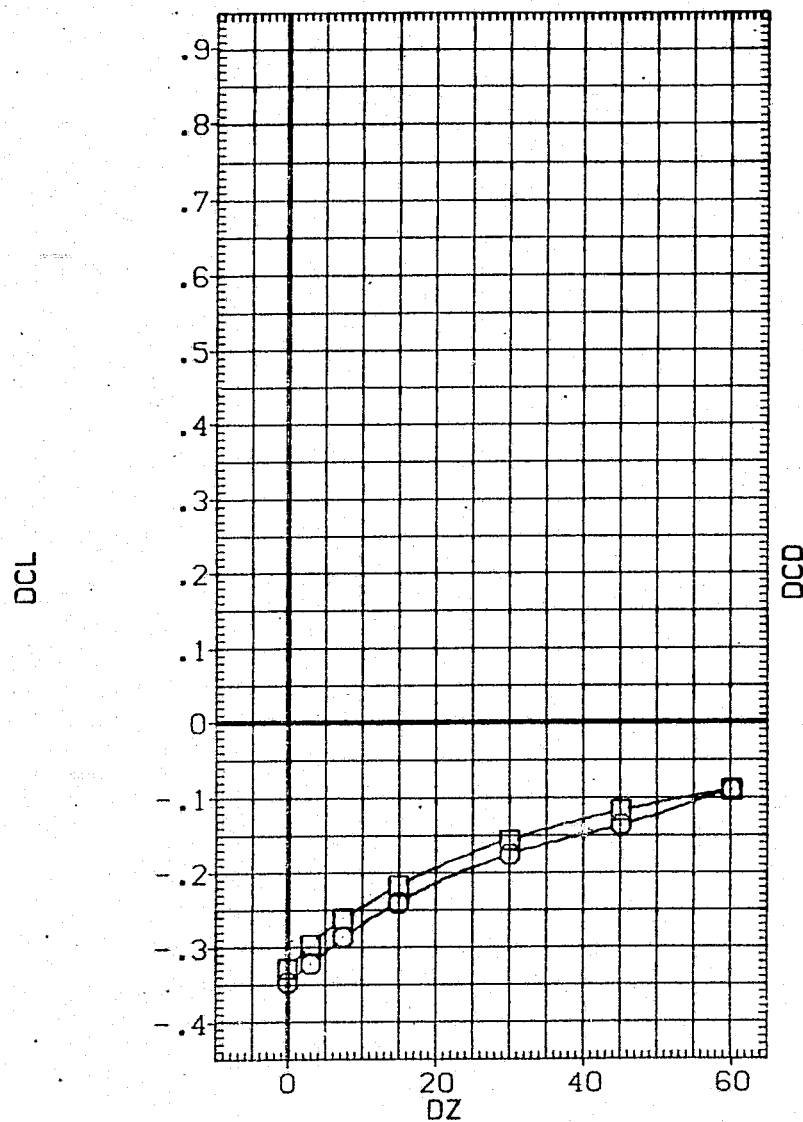


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN107)

SYMBOL		PARAMETRIC VALUES				
○	ALPHA0	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600	
		PHI	.000	BETA0	-5.000	
		BETAC	-5.000	DY	10.000	
		DX	10.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

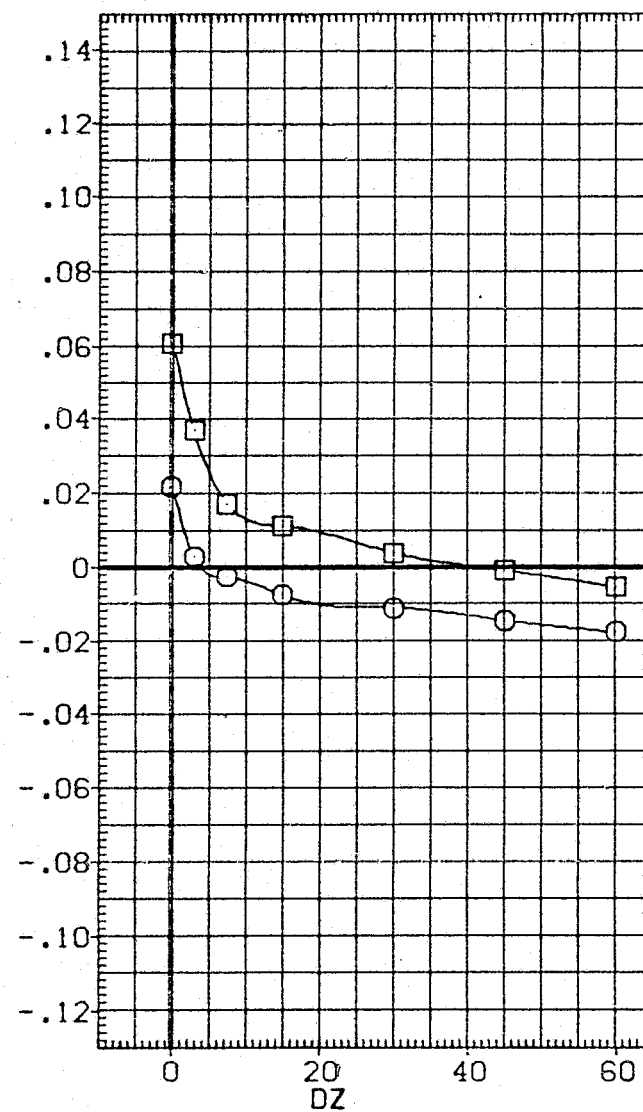
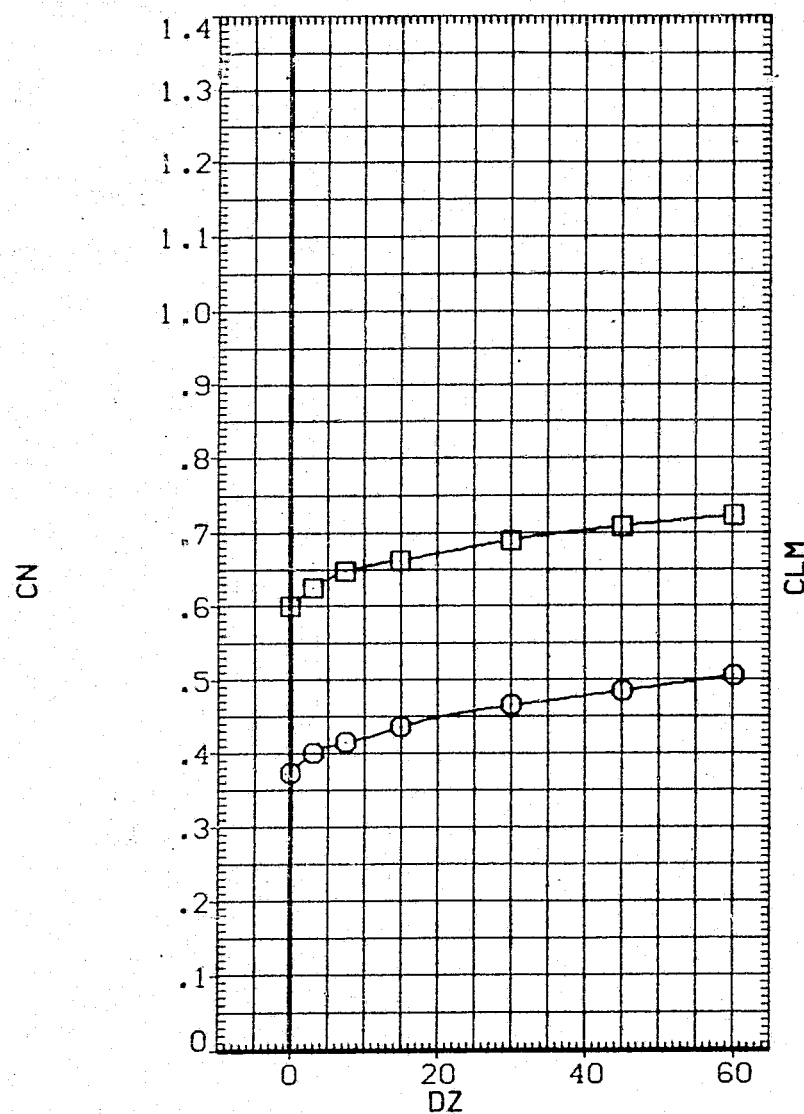


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

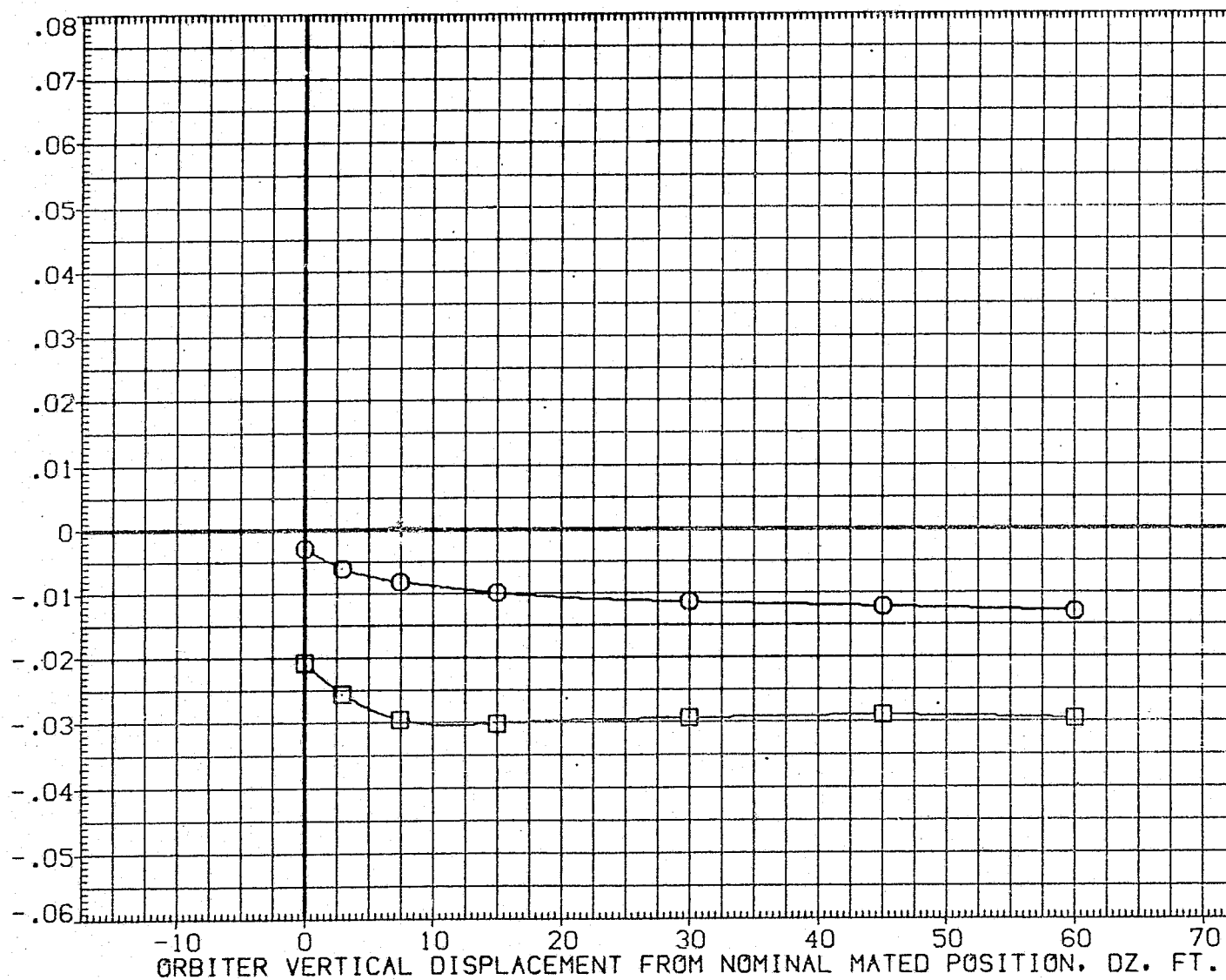


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN107)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

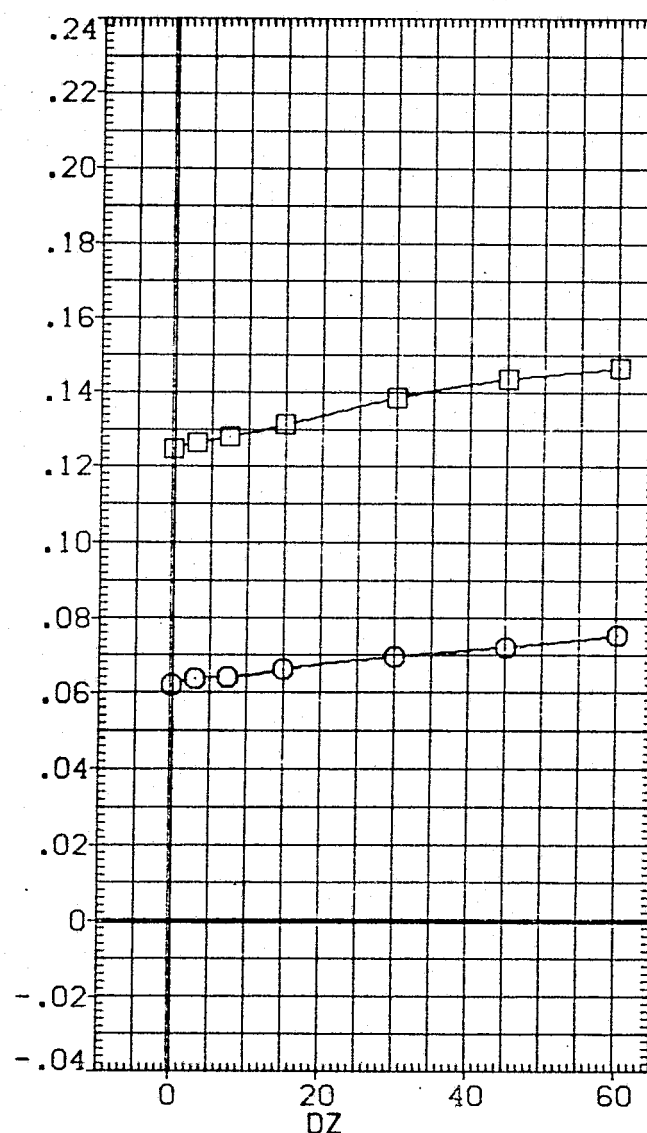
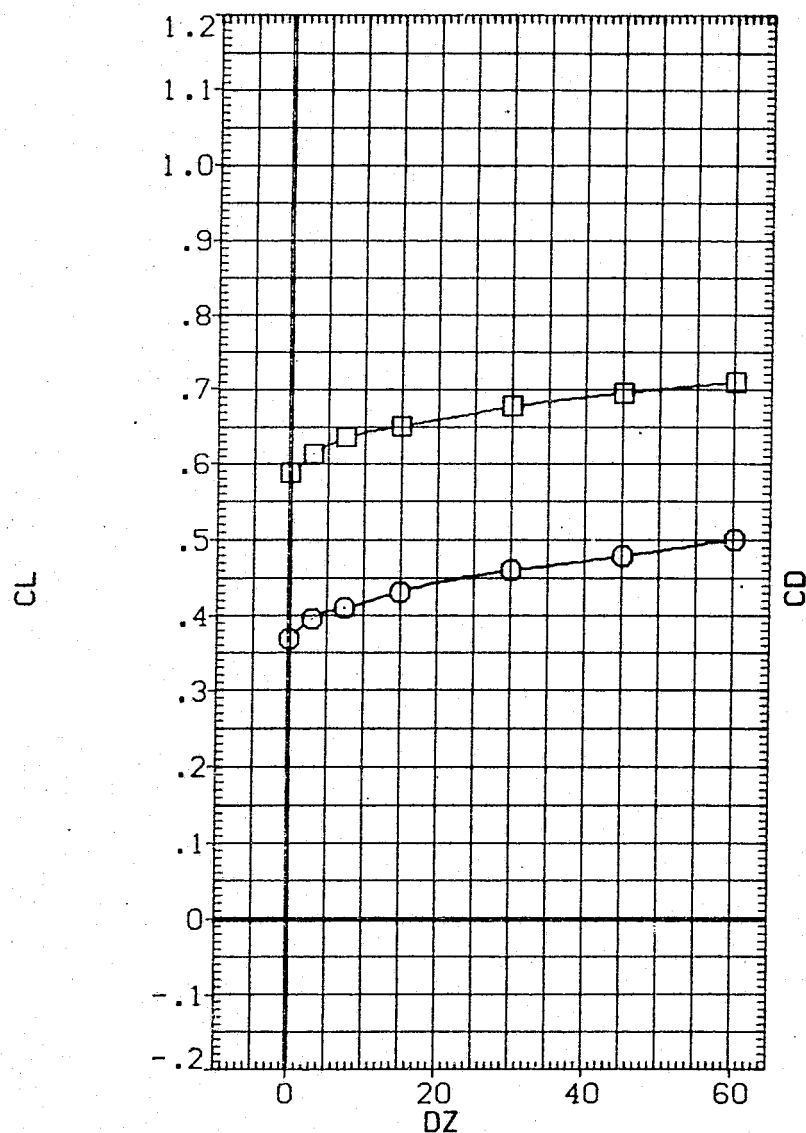


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-1B .000	ELV-0B 3.000
□	14.000	ELEVON 5.000	MACH .600
		PHI .000	BETA0 -5.000
		BETAC -5.000	DY 10.000
		DX 10.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

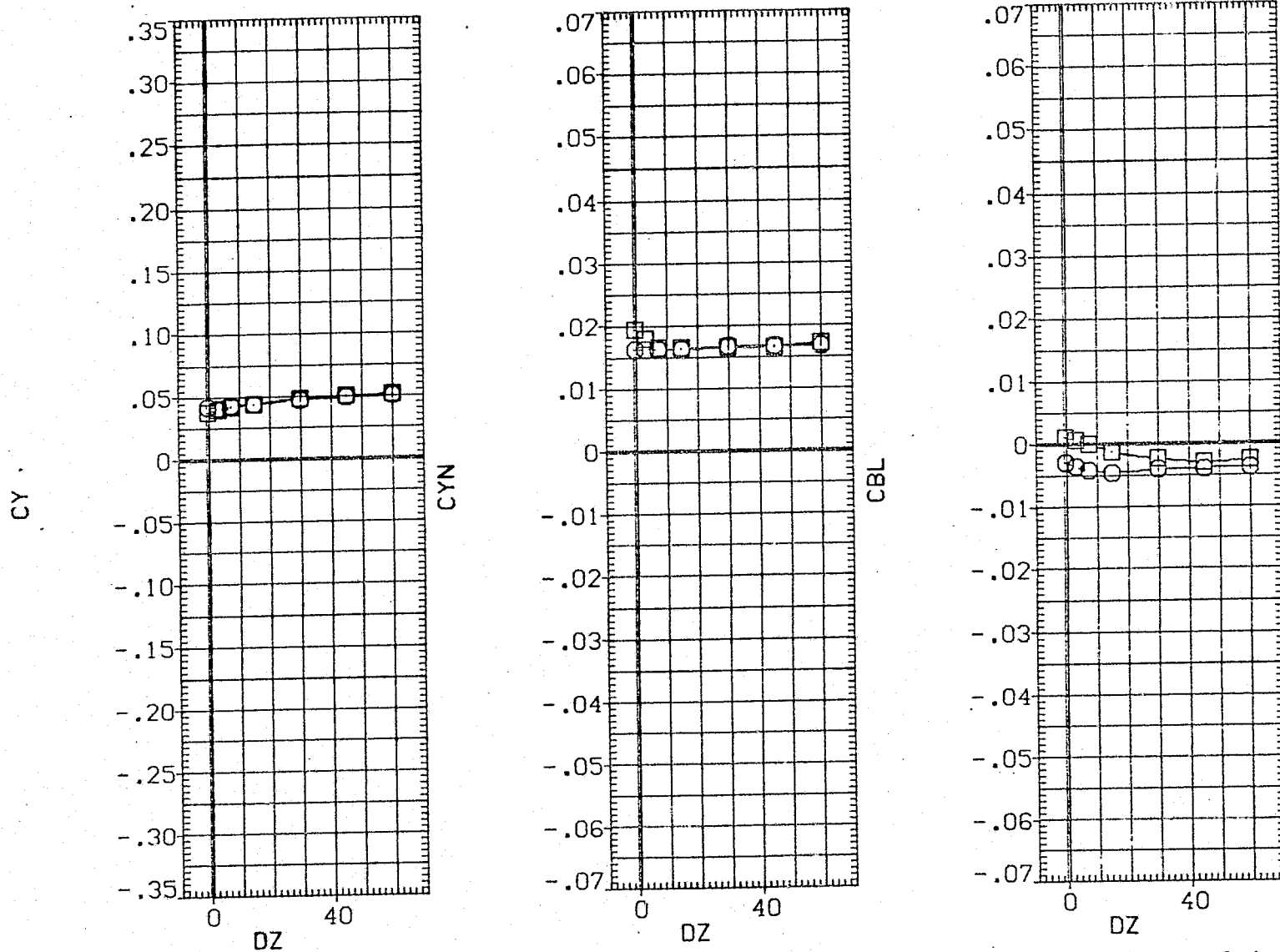


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (107 - 007)(VGN107)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

10.000

BETAC

ELV-08

MACH

DX

BETA0

-5.000

3.000

.600

10.000

-5.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

50.FT.

IN.

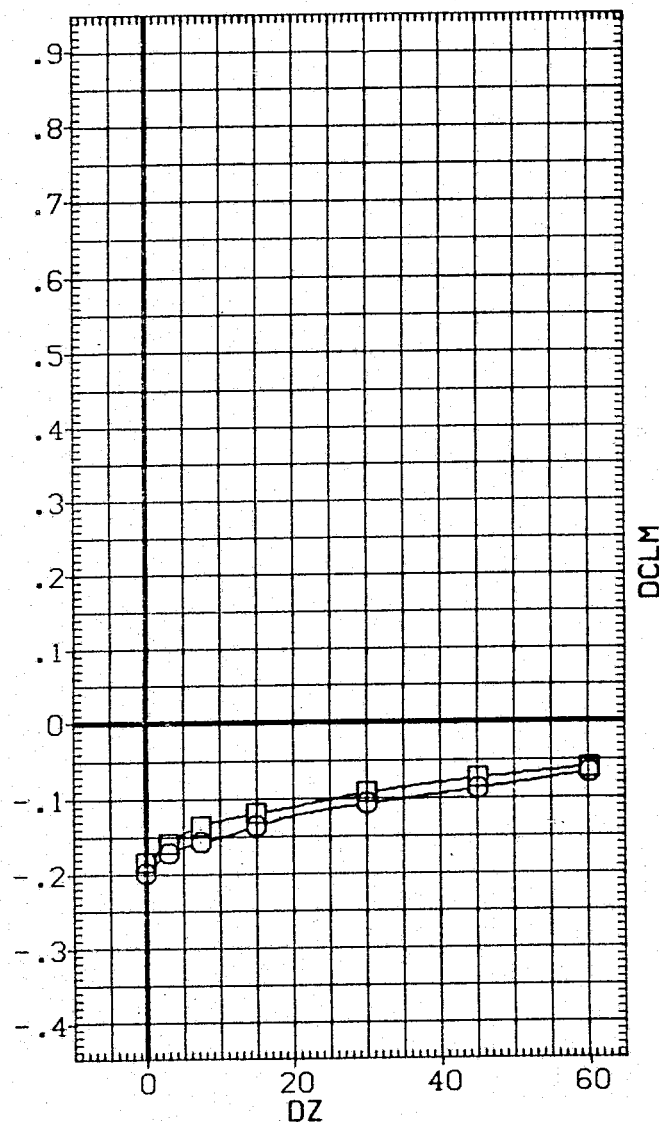
IN.

IN.X0

IN.Y0

IN.Z0

DCN



DCLM

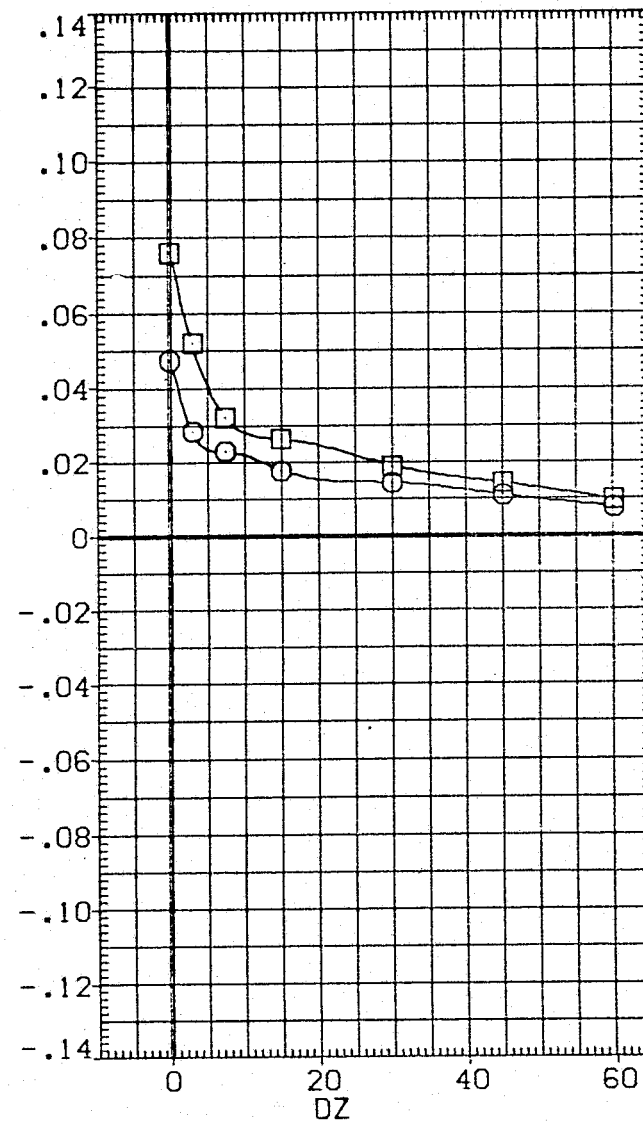


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

10.000

BETAC

ELV-0B

MACH

DX

BETA0

-5.000

3.000

.600

10.000

-5.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

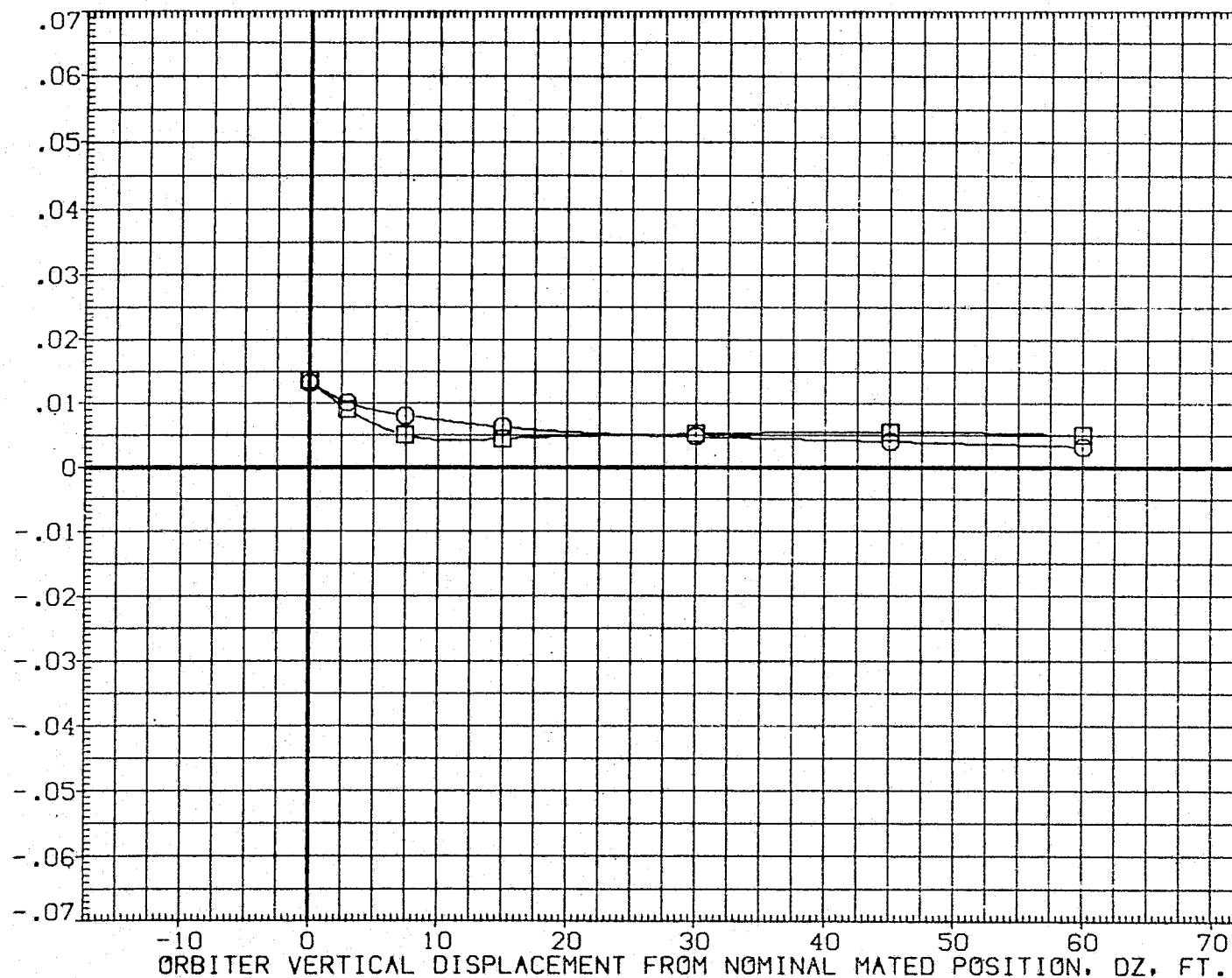


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (107 - 007) (VGN107)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHA0	4.000	BETA0	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

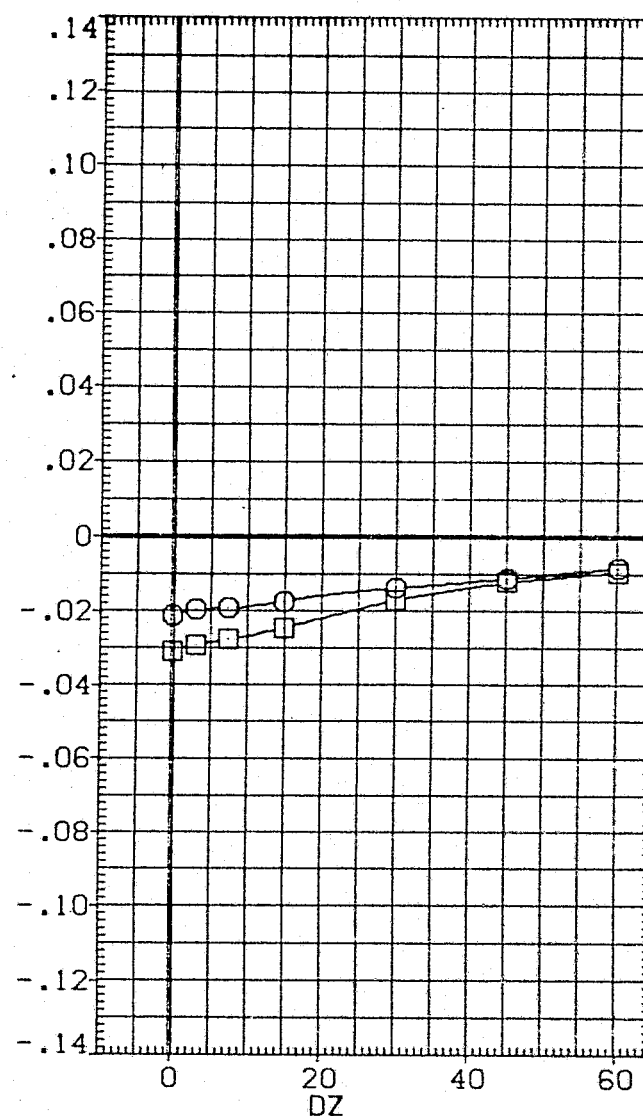
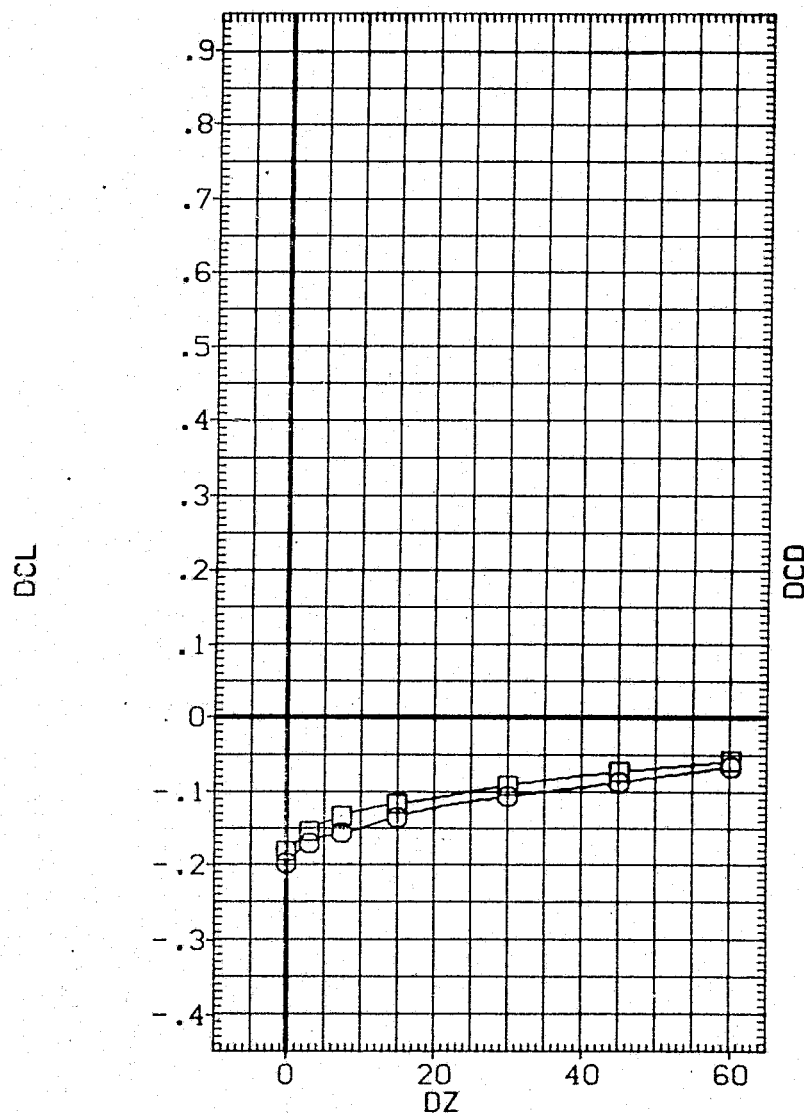


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

ELV-18

PARAMETRIC VALUES

.000

ELV-08

3.000

ELEVON

5.000

MACH

.600

PHI

.000

BETA0

-5.000

BETAC

-5.000

DY

10.000

DX

10.000

ALPHAC

8.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

CN

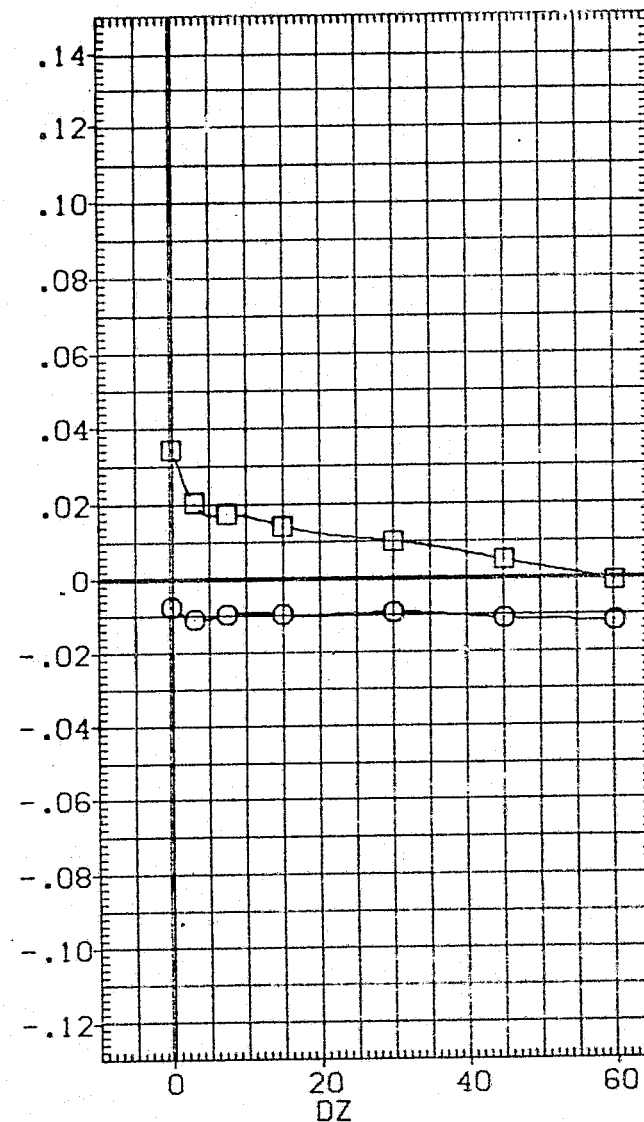
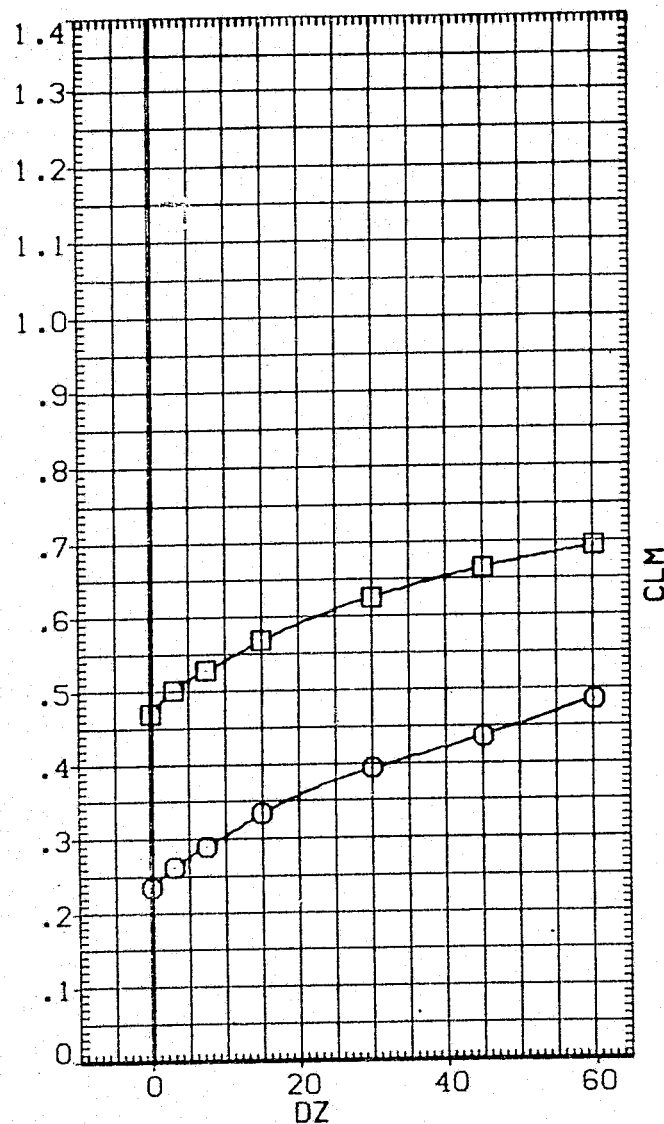


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN108)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

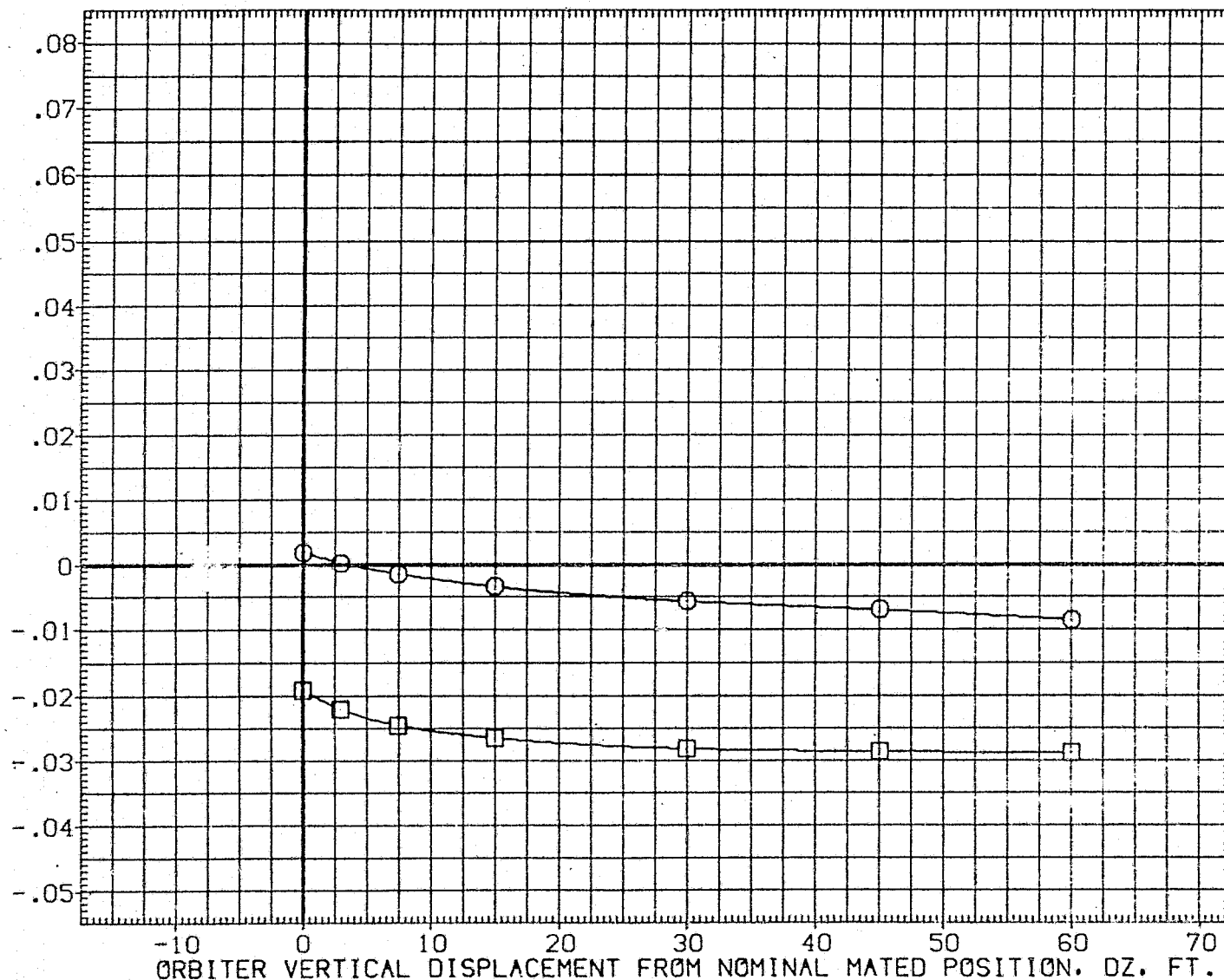


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI .000 BETA0 -5.000
		BETAC -5.000 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1103.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

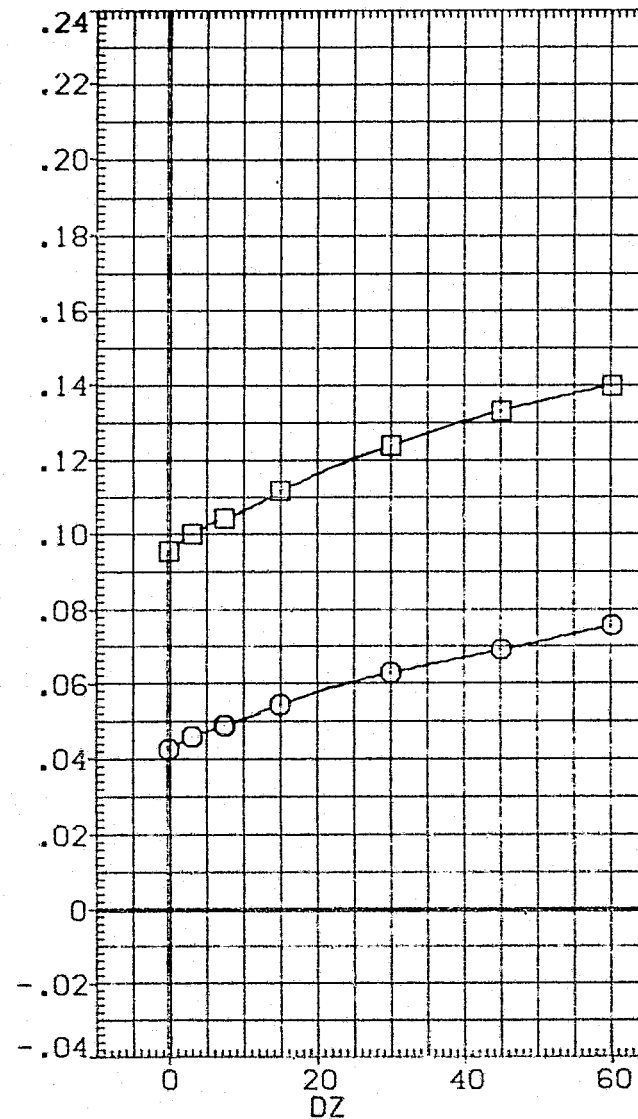
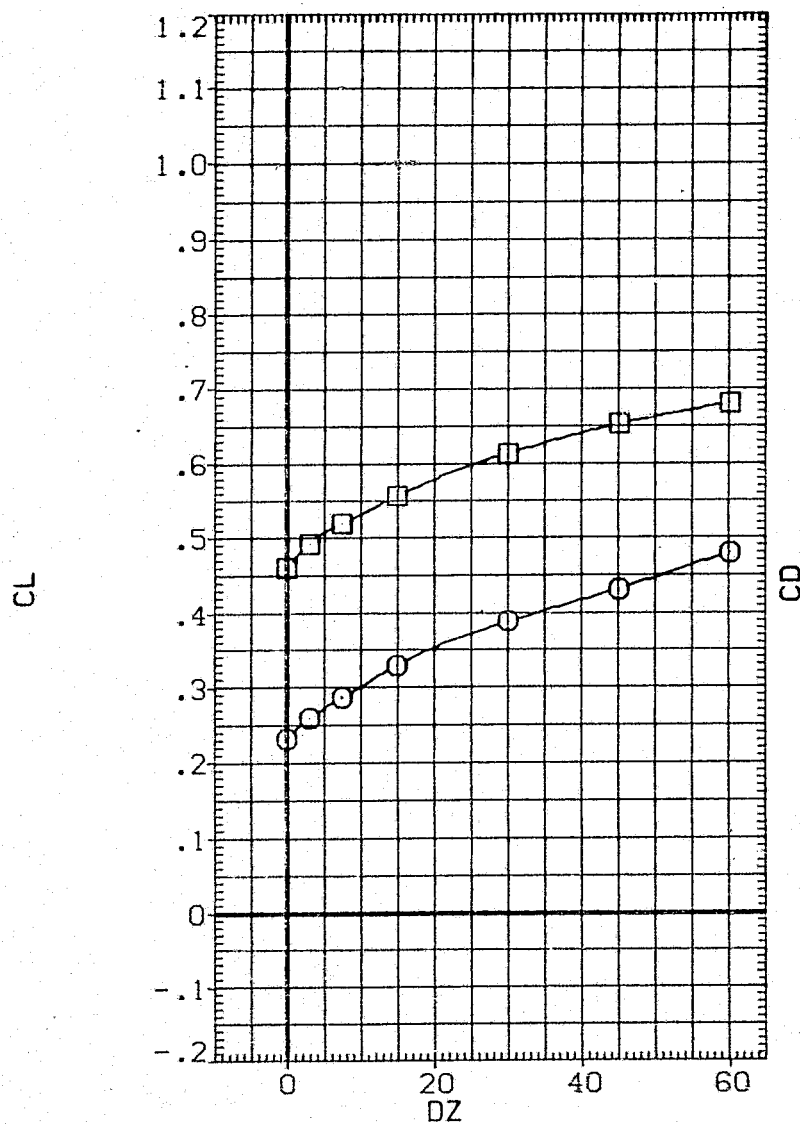


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN108)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-1B .000	ELV-0B 3.000
□	14.000	ELEV0N 5.000	MACH .600
		PHI .000	BETA0 -5.000
		BETAC -5.000	DY 10.000
		DX 10.000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

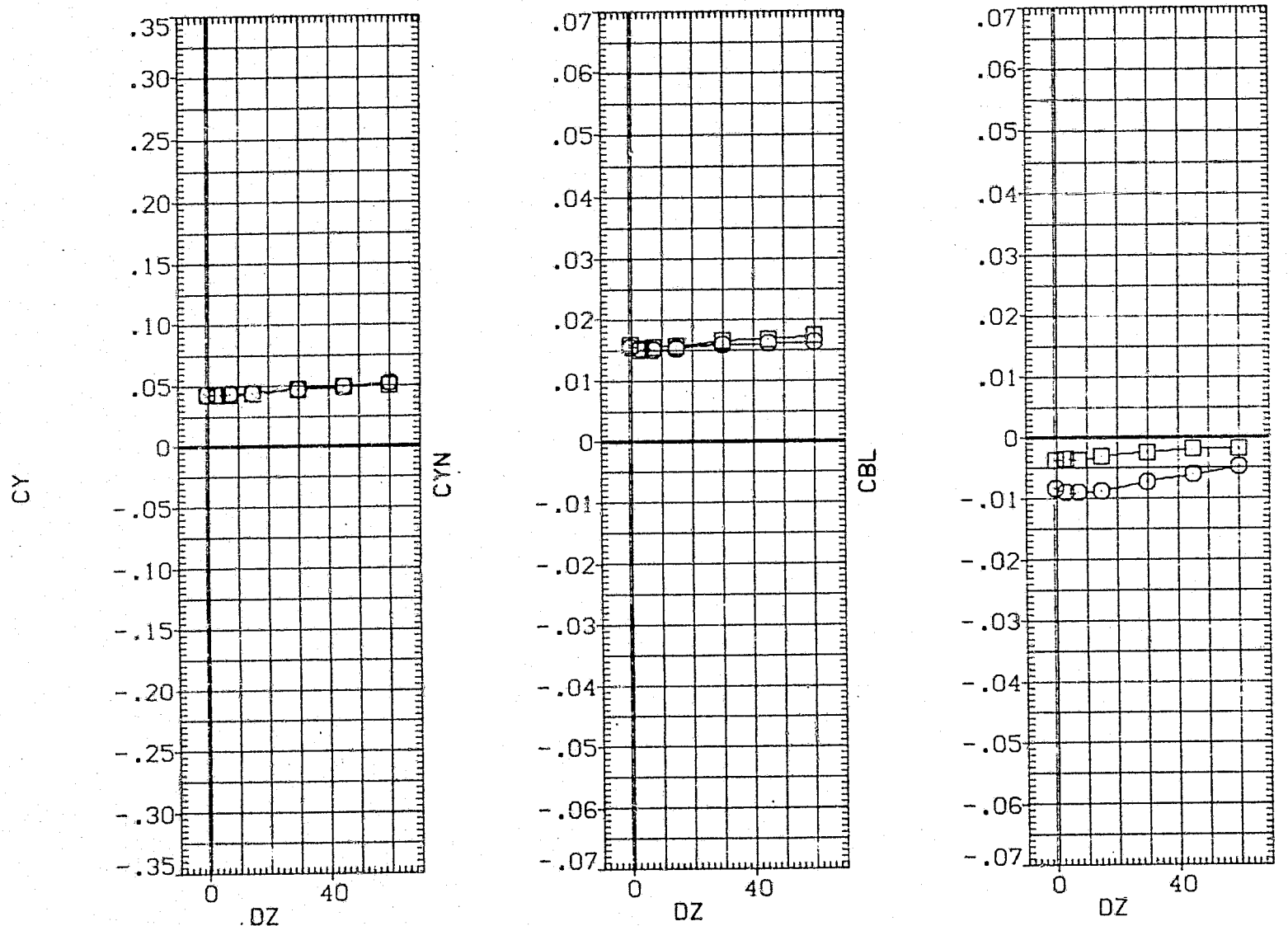


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (108 - 007) (VGN108)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

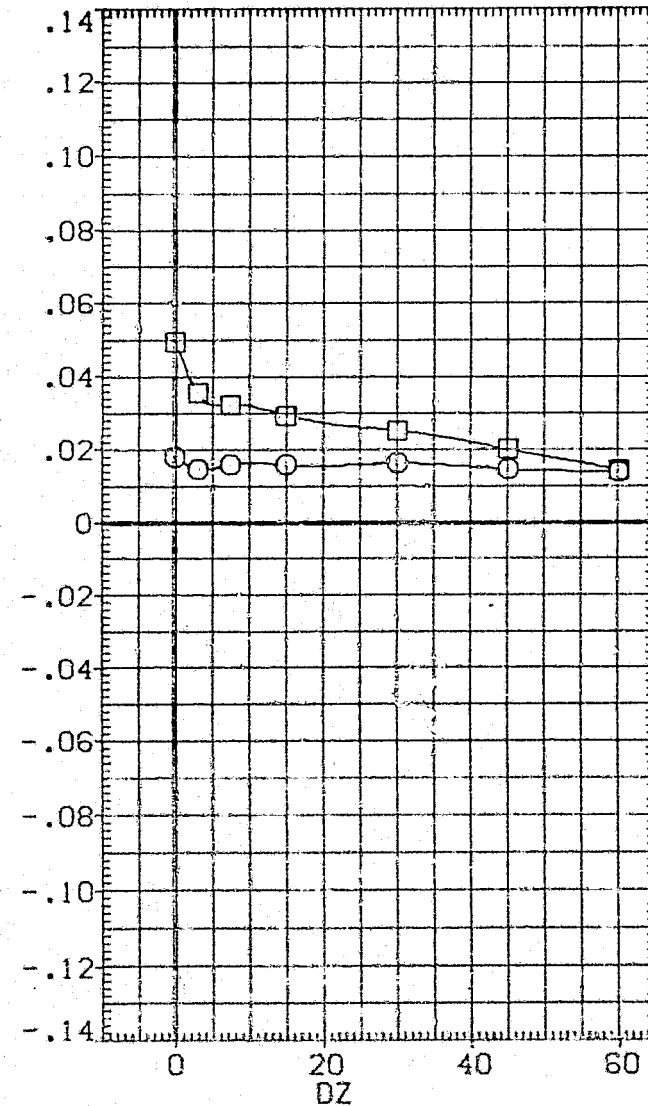
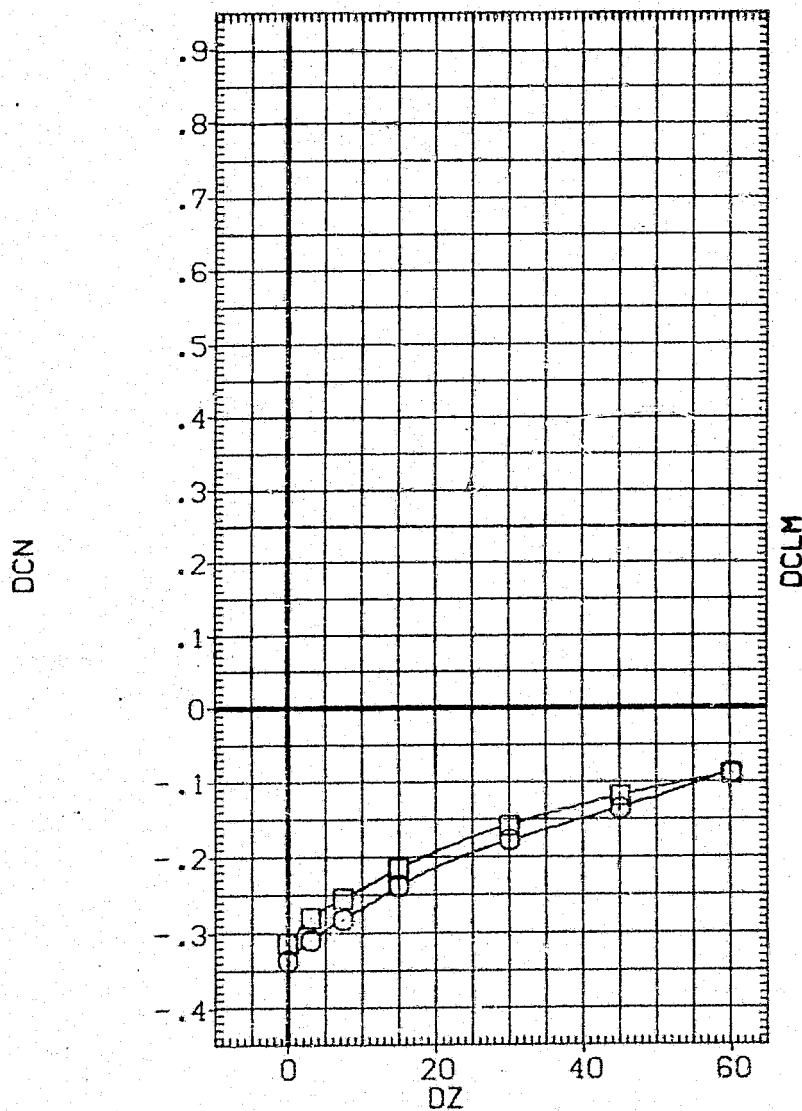


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

ALPHAC

14.000

PARAMETRIC VALUES

8.000

BETAC

-5.000

ELV-0B

3.000

MACH

.600

DX

10.000

BETA0

-5.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

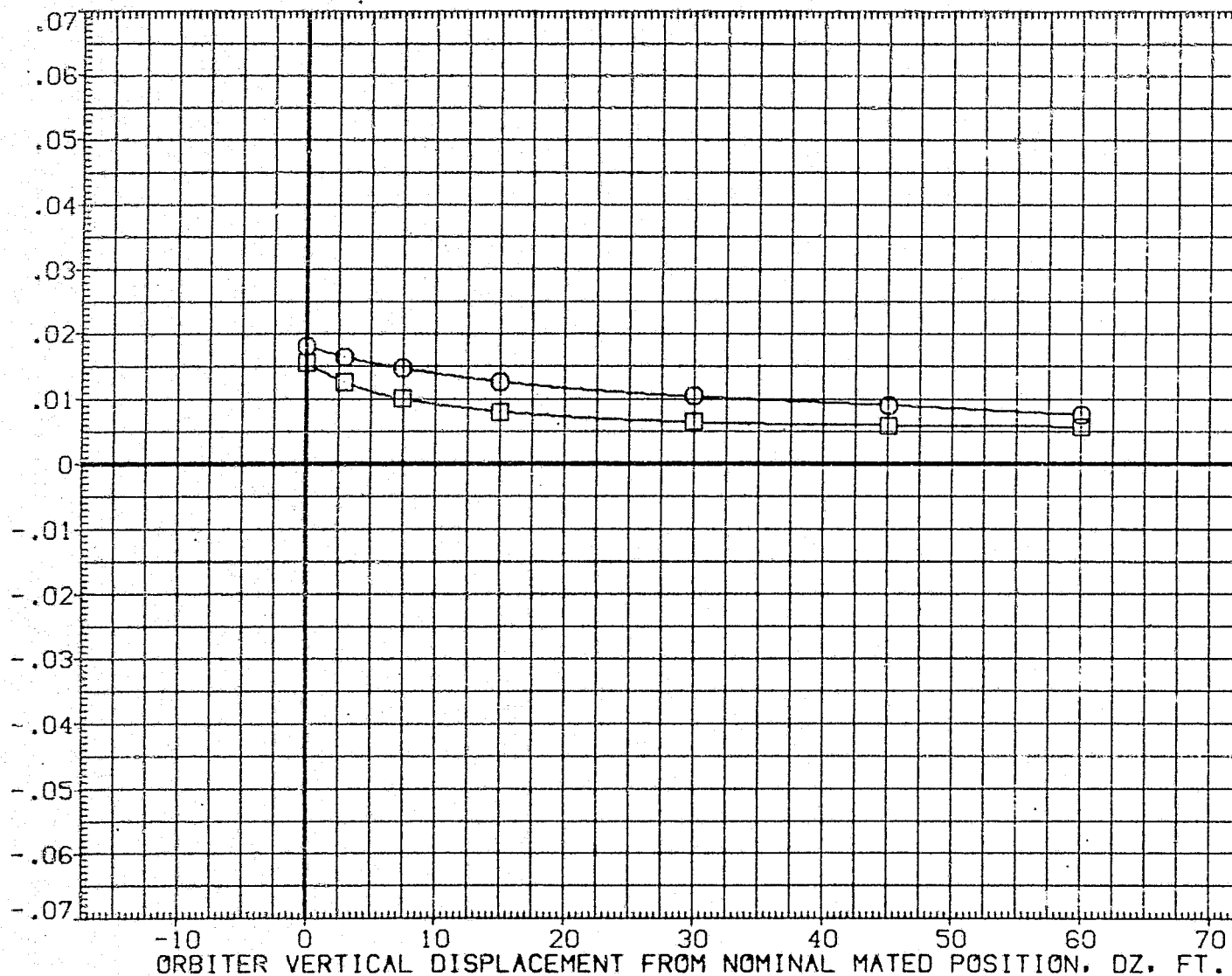


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY 10.000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

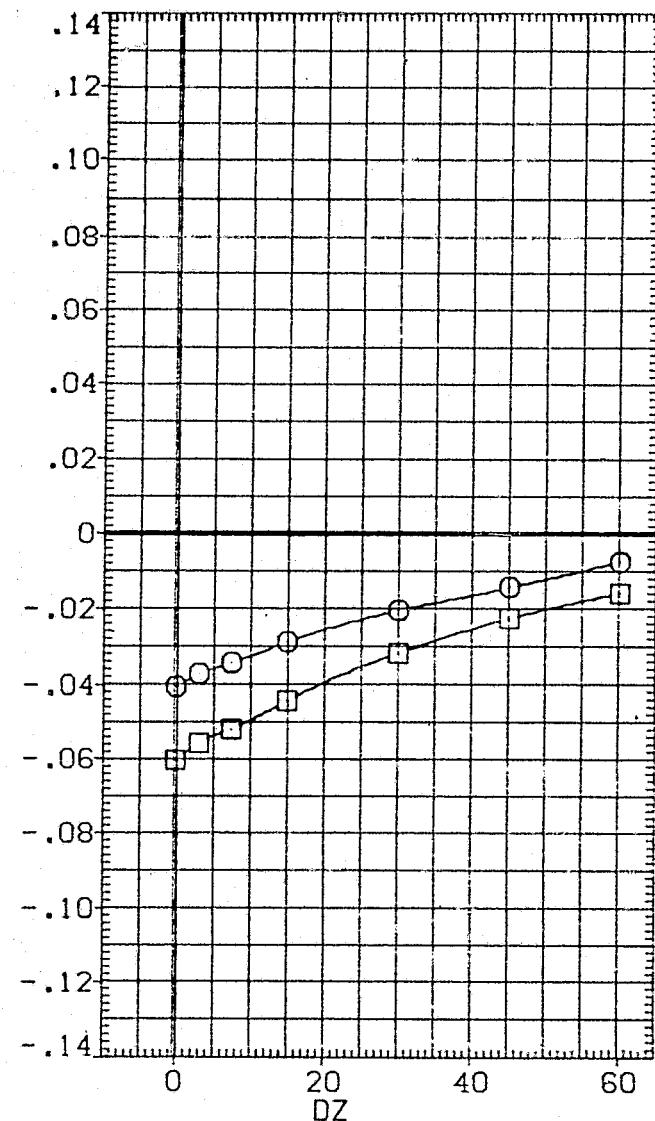
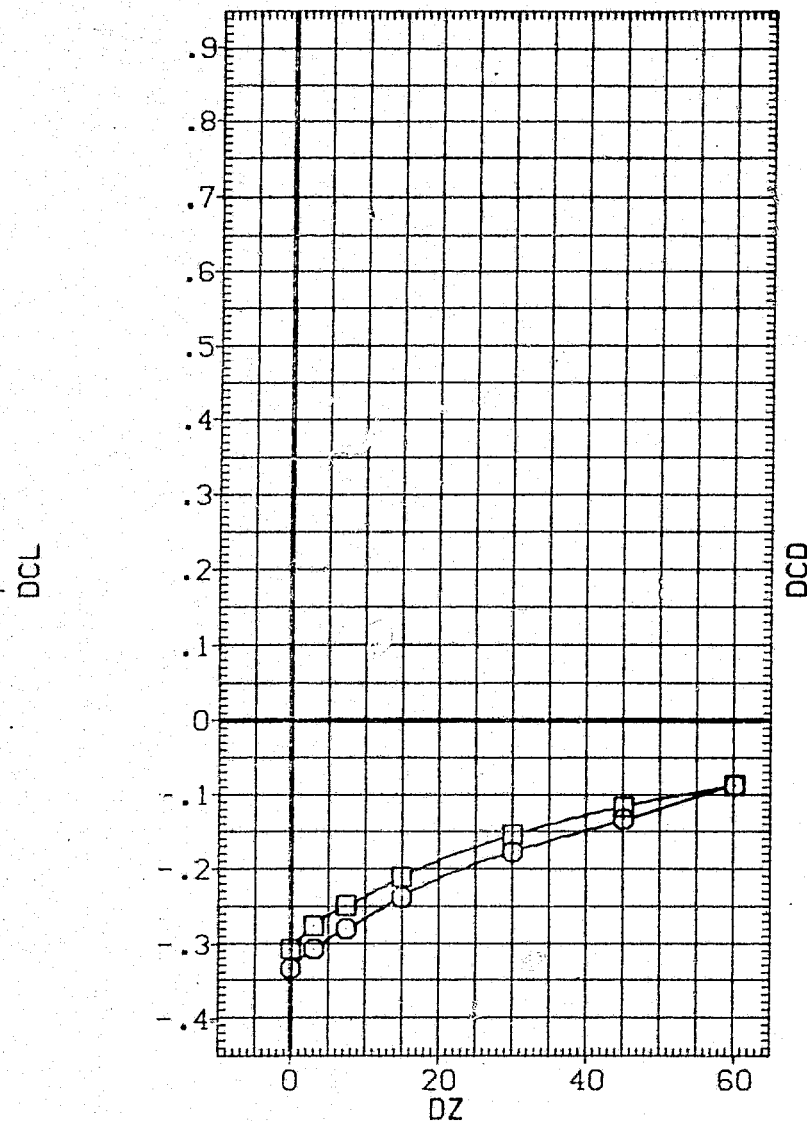


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN109)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	ELV-1B	.000	ELV-0B	3.000	
○	14.000	ELEVON	5.000	MACH	.600	
□		PHI	.000	BETA0	-5.000	
		BETAC	.000	DY	.000	
		DX	10.000	ALPHAC	4.000	

REFERENCE INFORMATION		
S/REF	2690.0000	SQ.FT.
L/REF	474.8100	IN.
B/REF	935.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

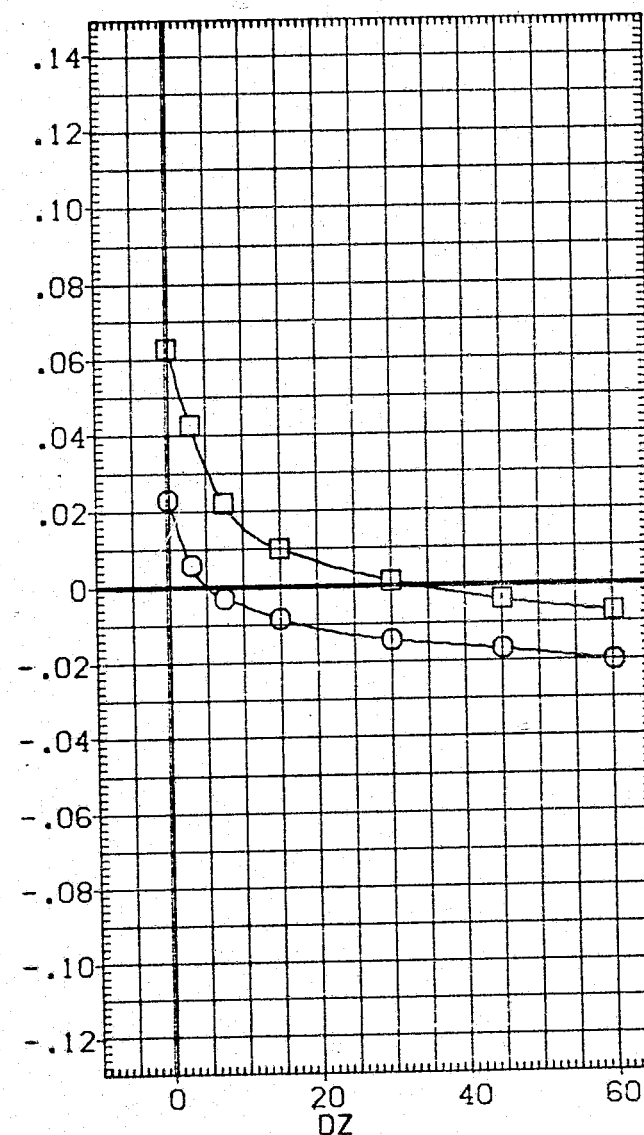
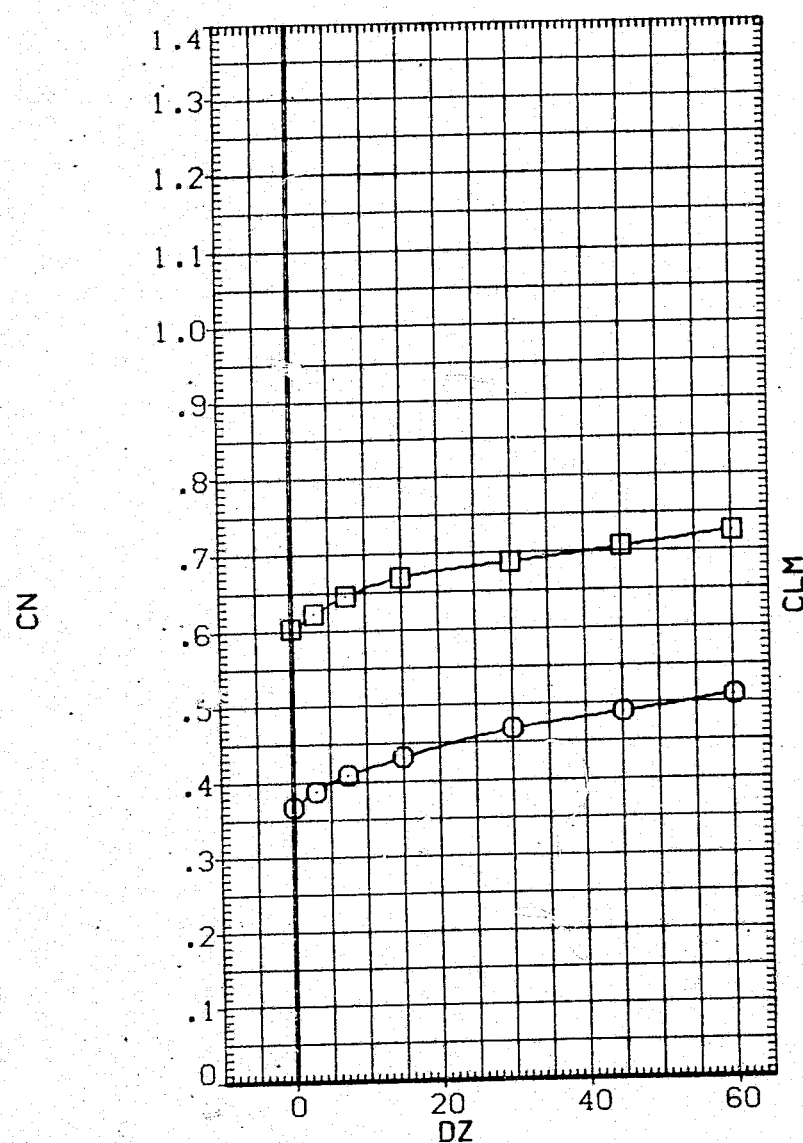


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-1B

ELEVON

PHI

BETAC

DX

PARAMETRIC VALUES

.000

5.000

.000

.000

10.000

ELV-0B

MACH

BETA0

DY

ALPHAC

3.000

.600

-5.000

.000

4.000

REFERENCE INFORMATION

SREF 2690.0000 50.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

AXIAL FORCE COEFFICIENT, CA

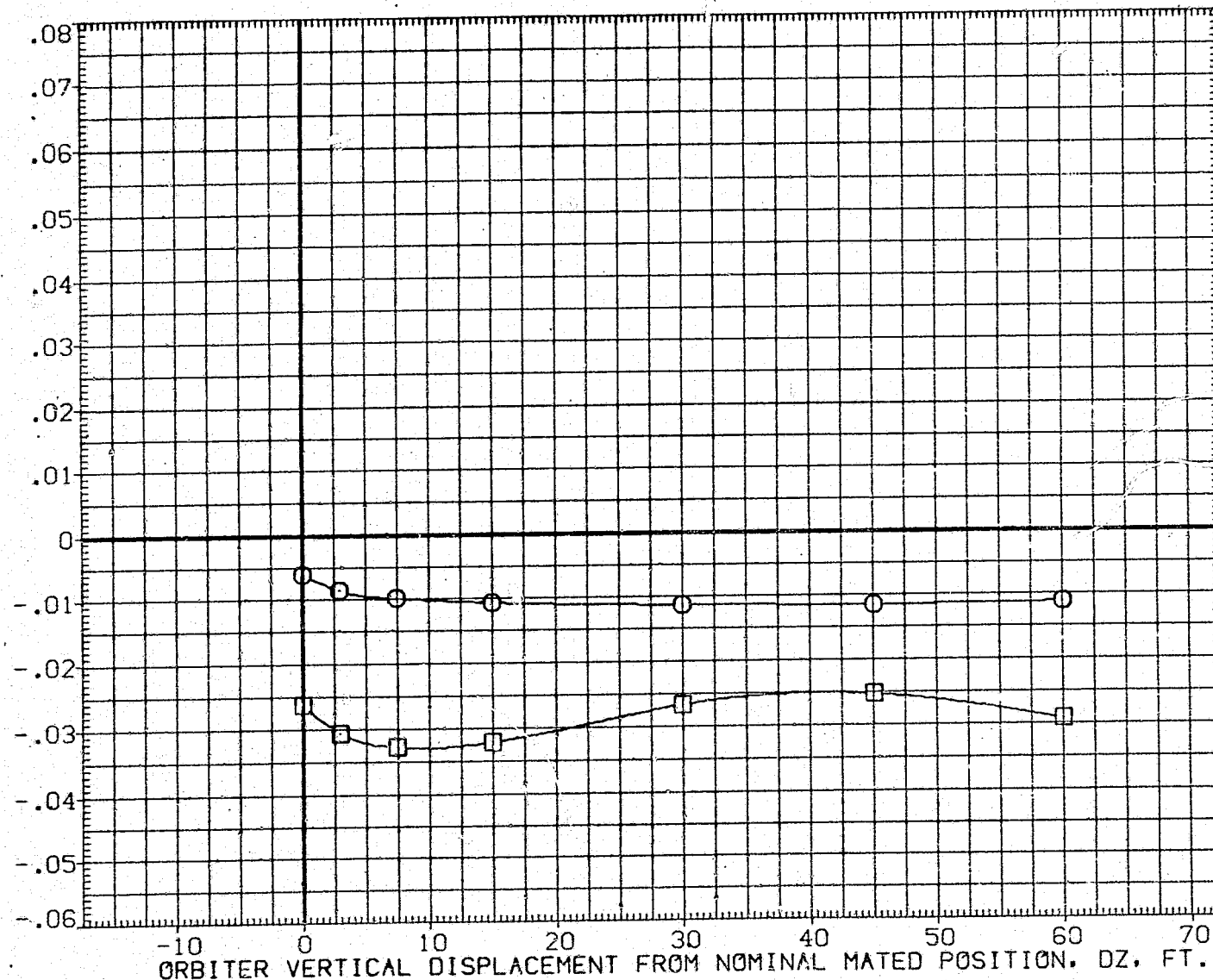


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN109)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	BETA0	-5.000
		BETAC	.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

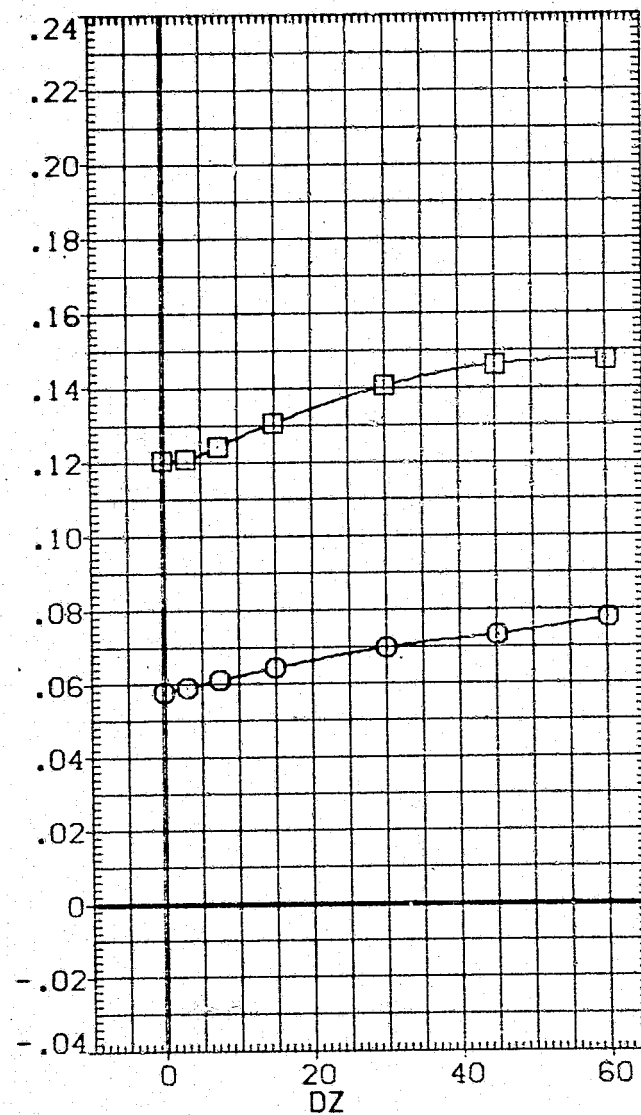
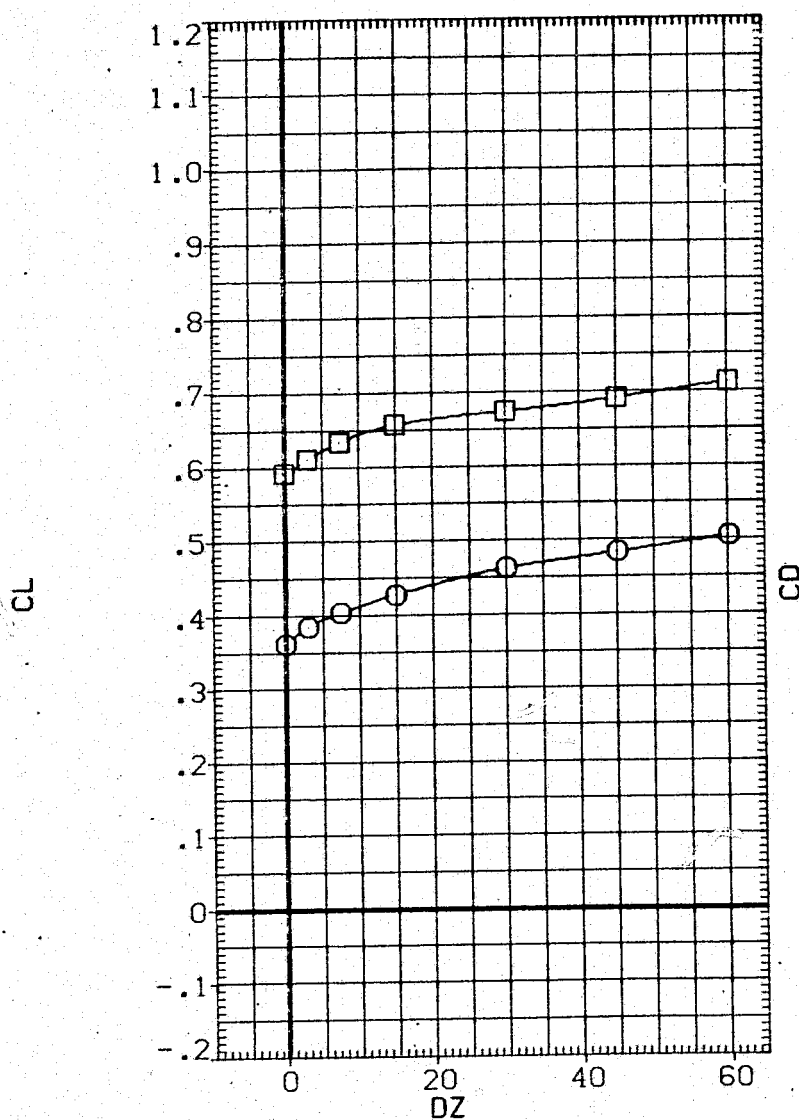


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI .000 BETA0 -5.000
		BETAC .000 DY .000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

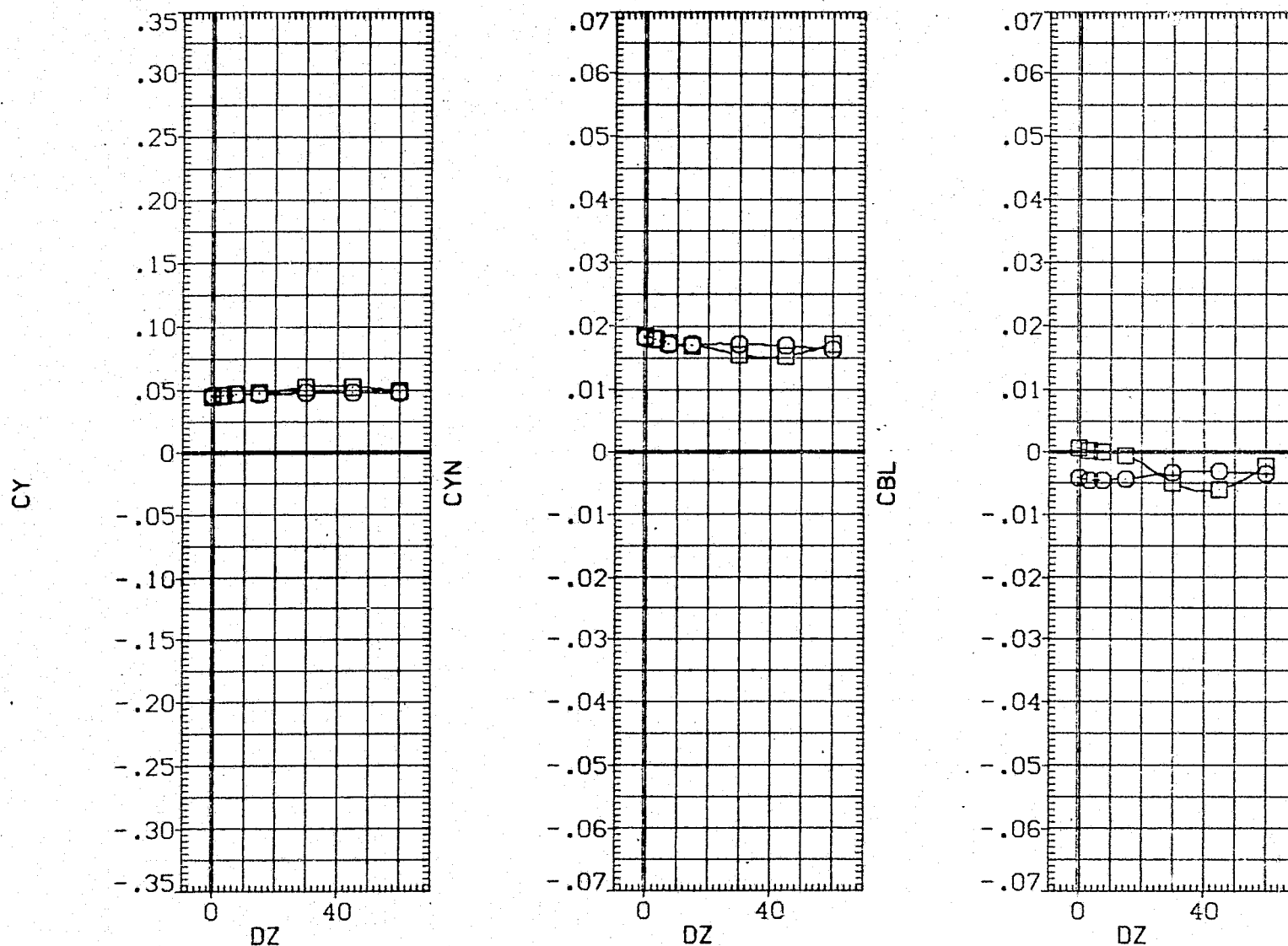


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (109 - 007) (VGN109)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

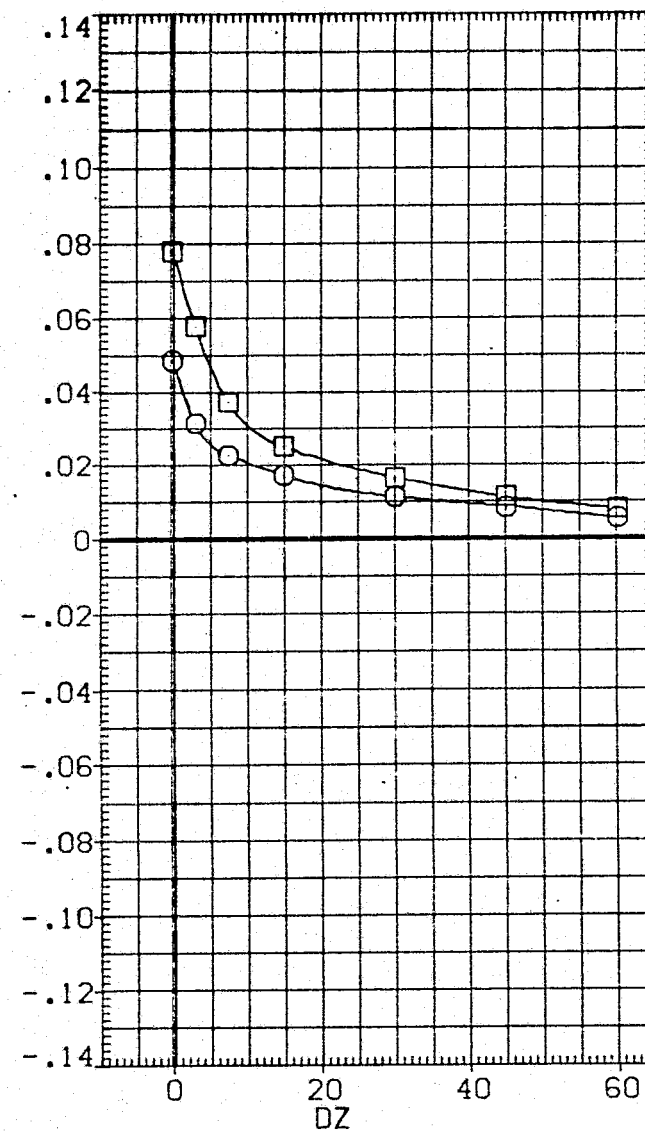
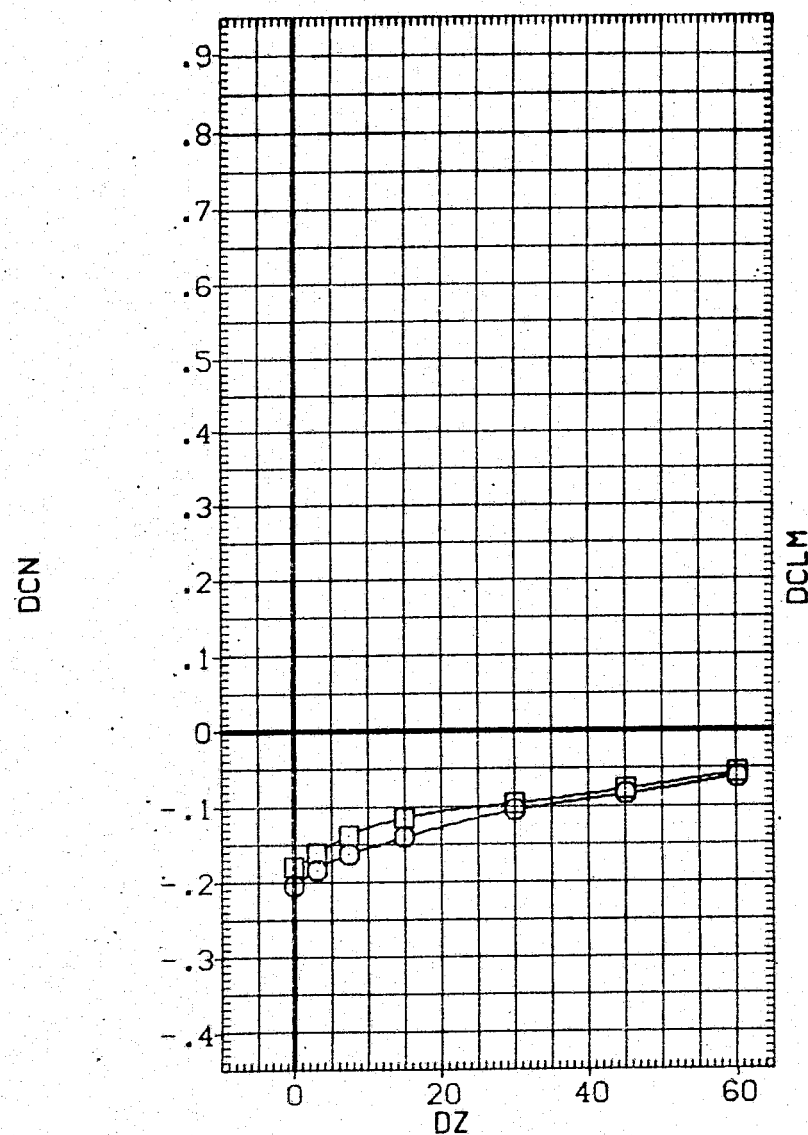


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

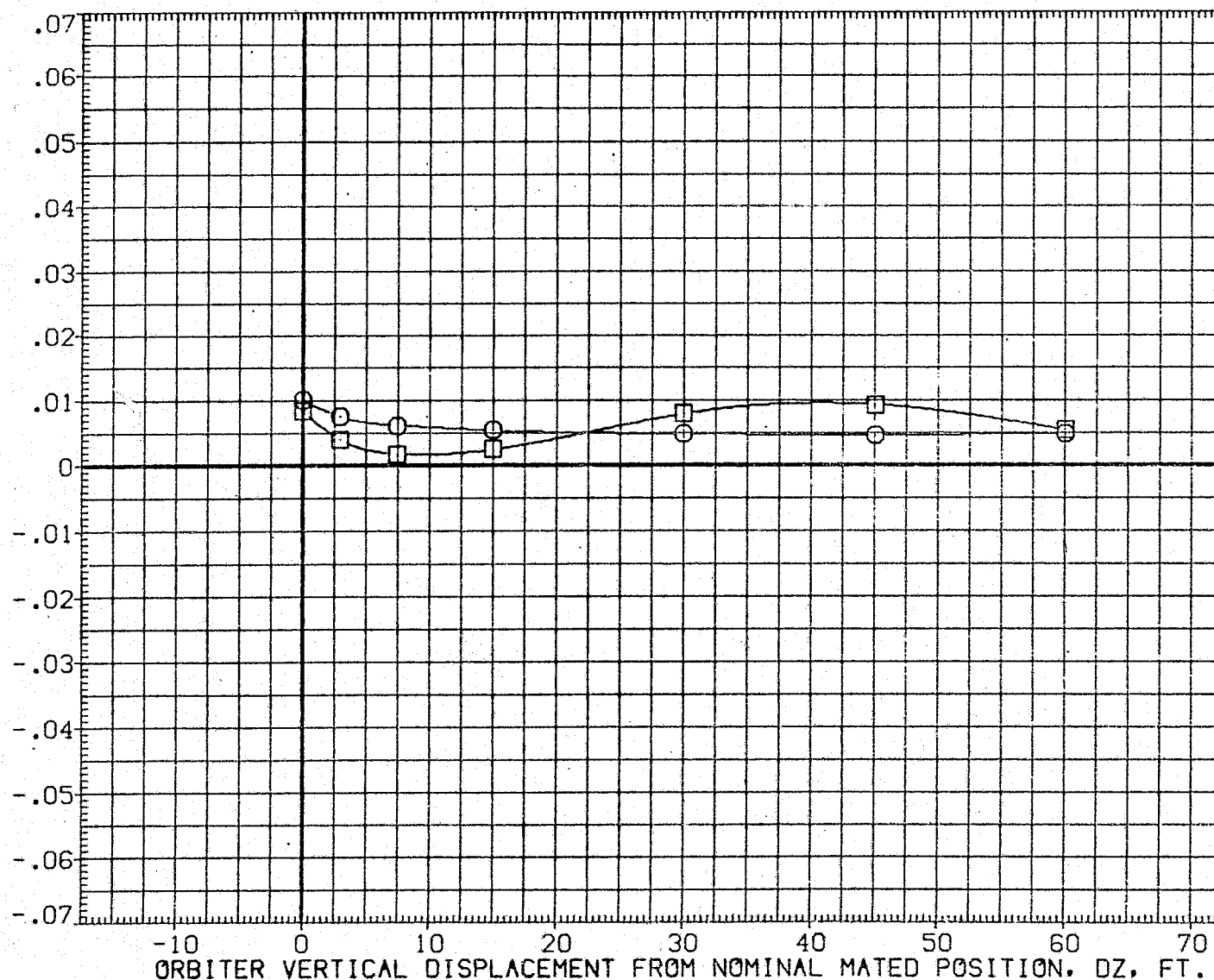


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (109 - 007)(VGN109)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

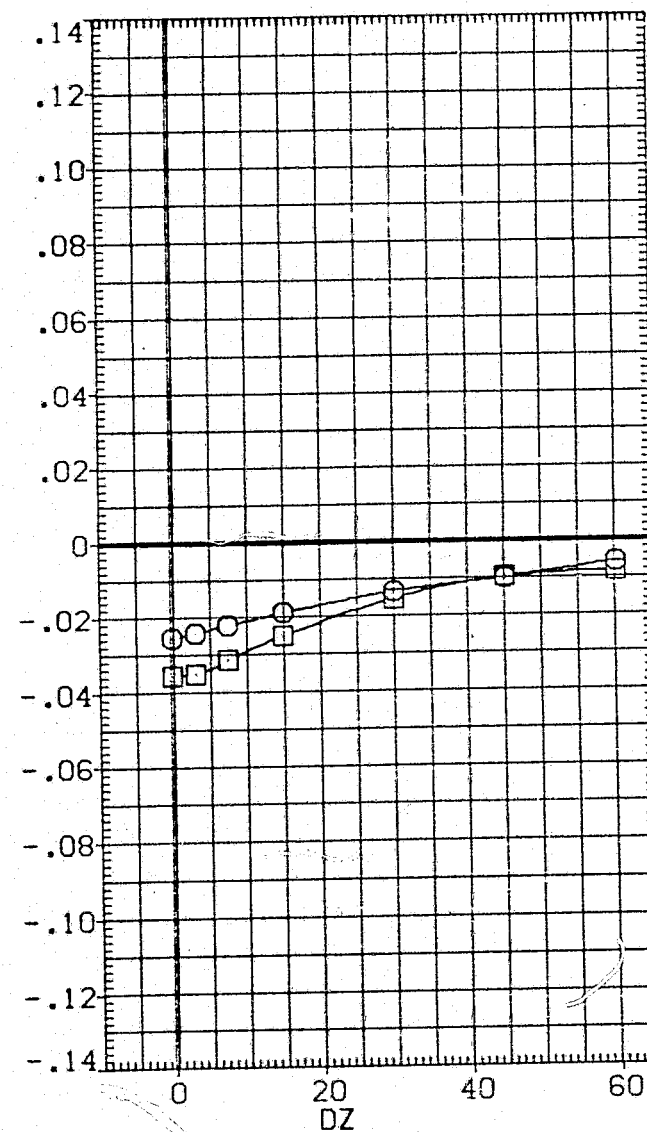
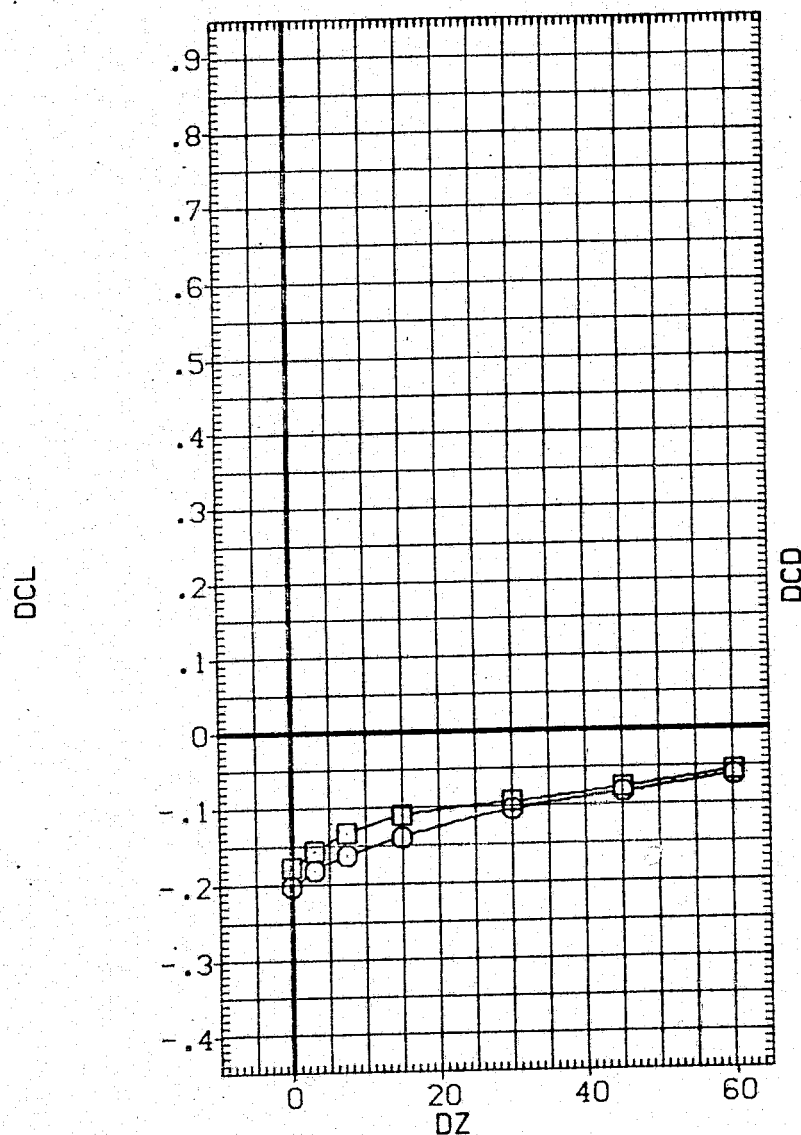


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-IB

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

.000

.000

ELV-OB

MACH

BETAC

DY

ALPHAC

3.000

.600

-5.000

.000

4.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

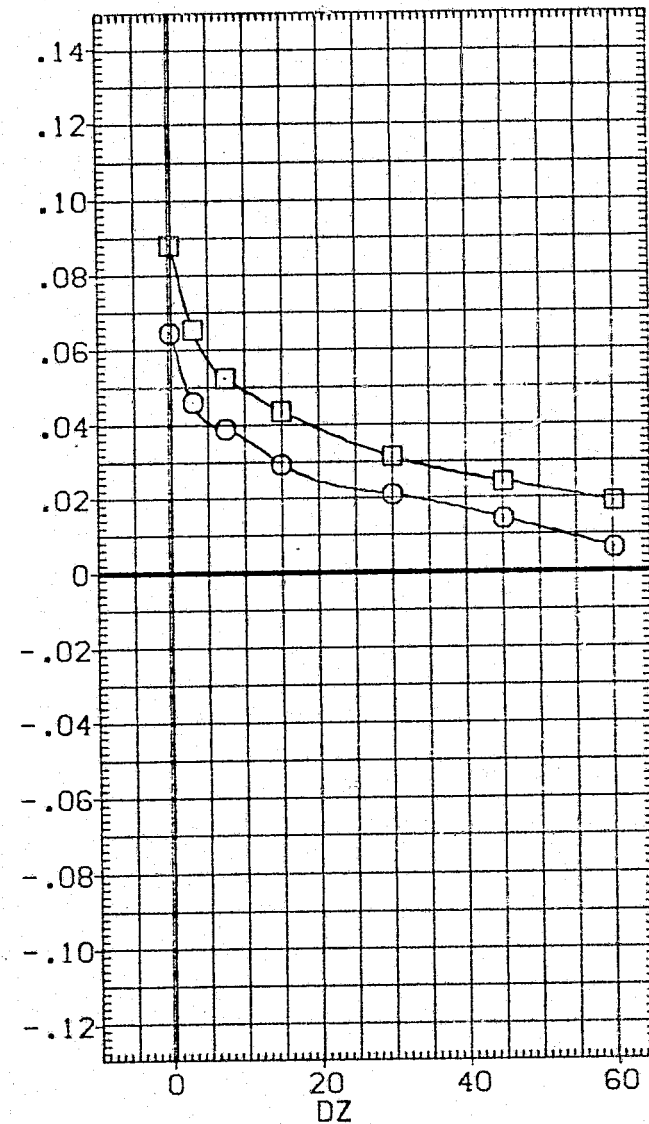
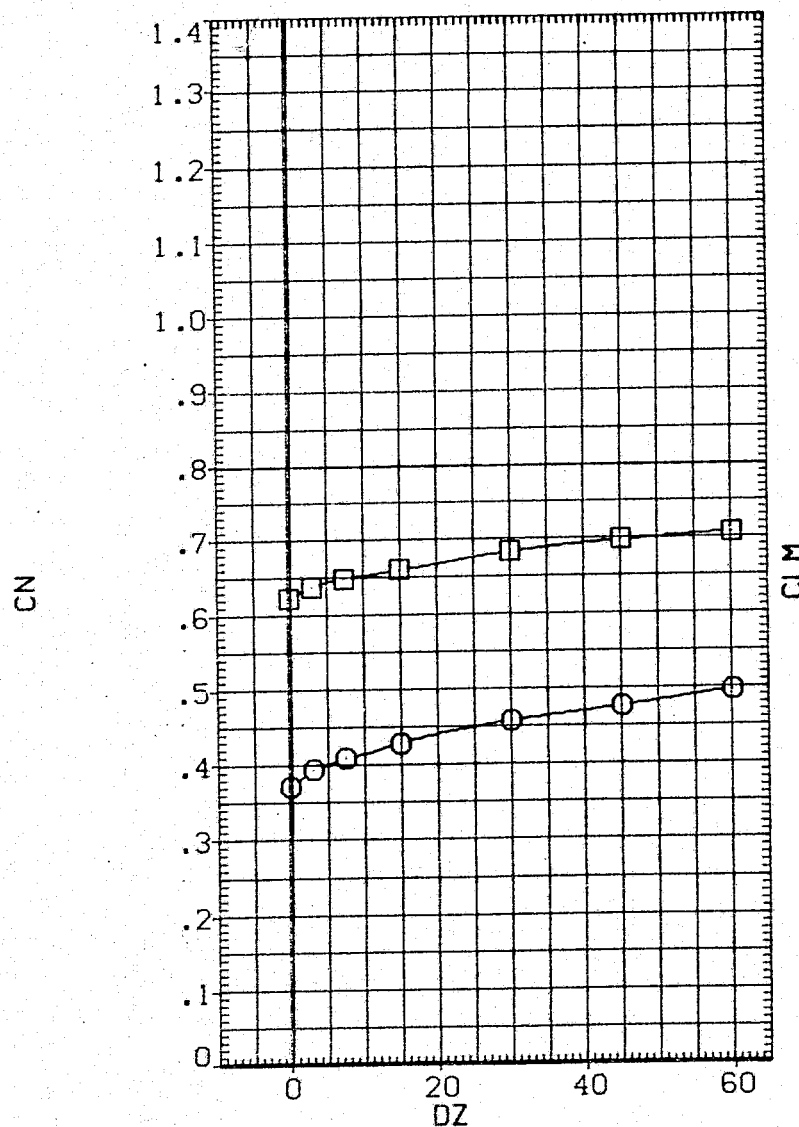


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN062)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

.030

.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

-5.000

.000

4.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

50. FT.

IN.

IN.

IN. X0

IN. Y0

IN. Z0

AXIAL FORCE COEFFICIENT, CA

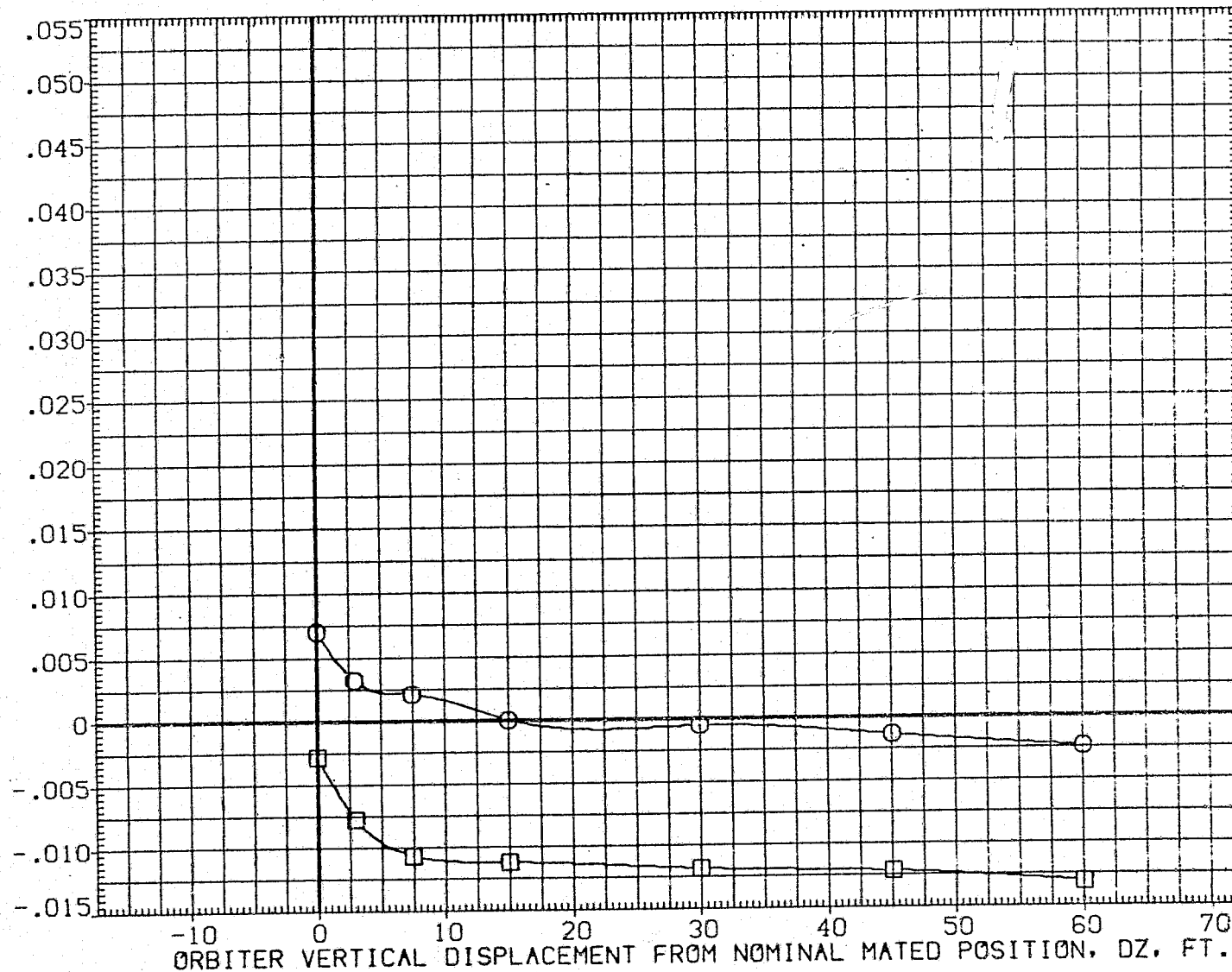


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

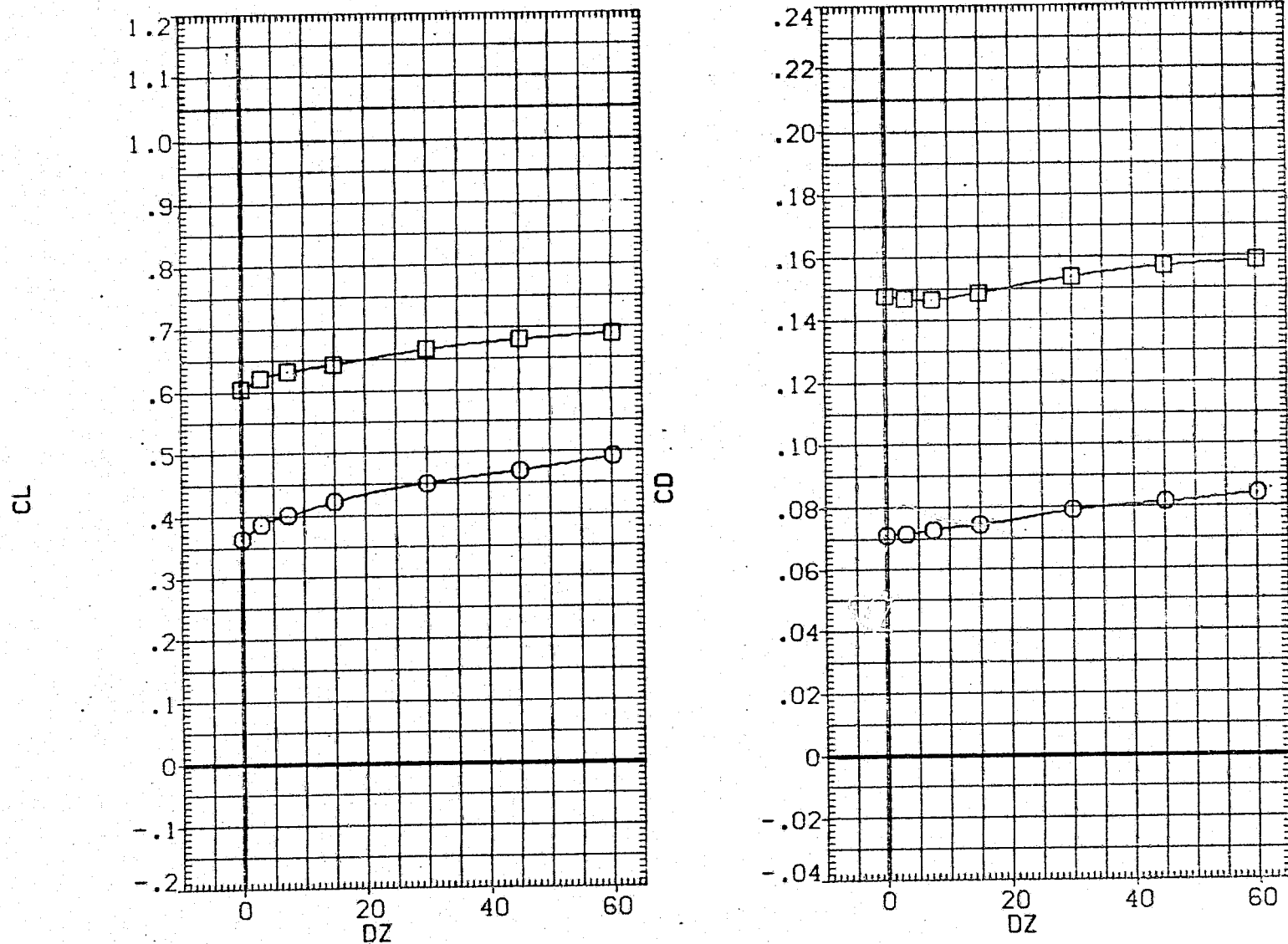


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN062)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-IB .000	ELV-OB 3.000
□	14.000	ELEVON 5.000	MACH .600
		BETA0 .000	BETAC -5.000
		PHI .000	DY .000
		DX .000	ALPHAC 4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

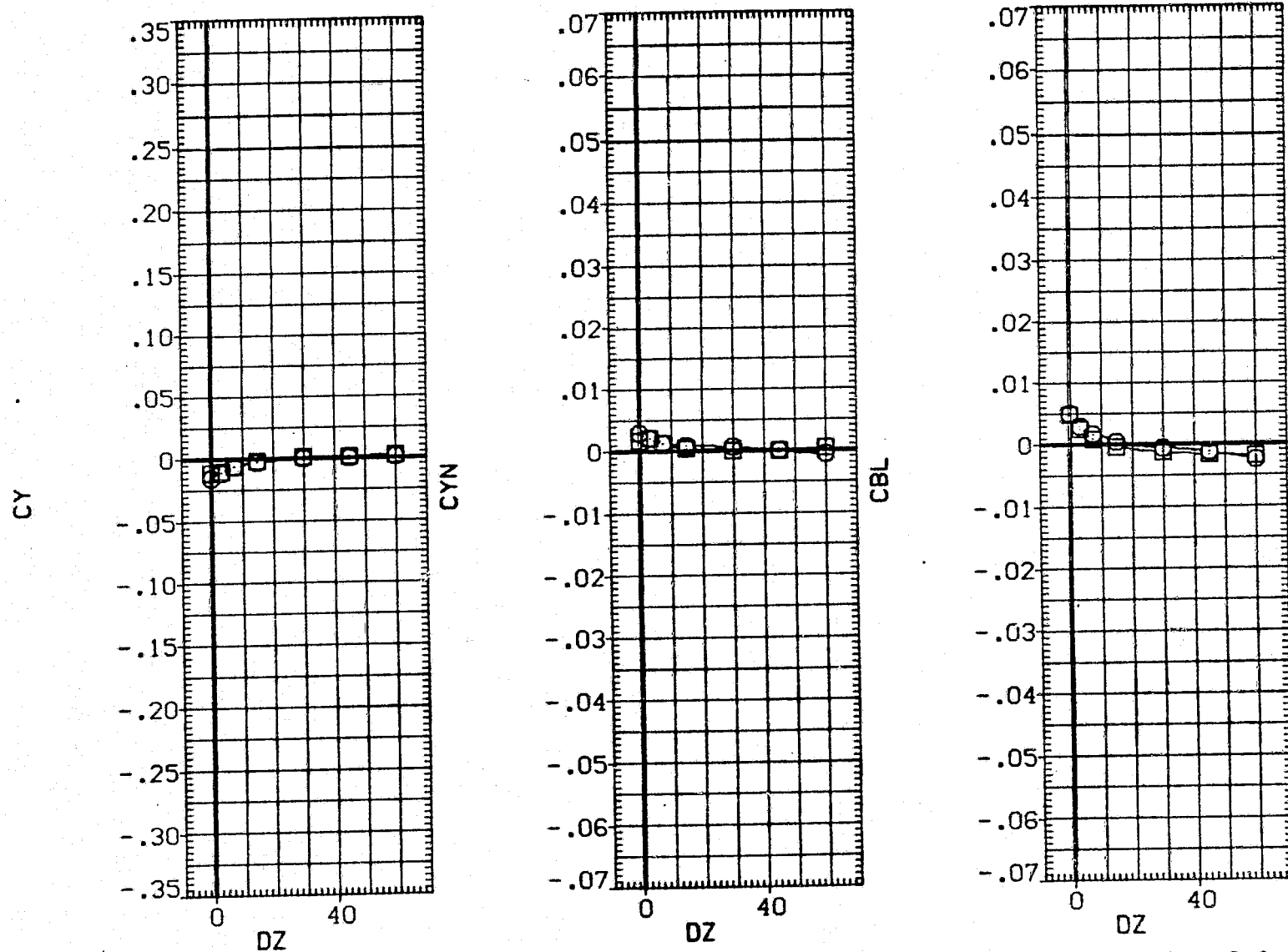


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 S1, PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	ALPHAC	4.000	BETAC	-5.000	
○	14.000	ELV-IB	.000	ELV-OB	3.000	
□		ELEVON	5.000	MACH	.600	
		PHI	.000	DX	.000	
		DY	.000	BETA0	.000	

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

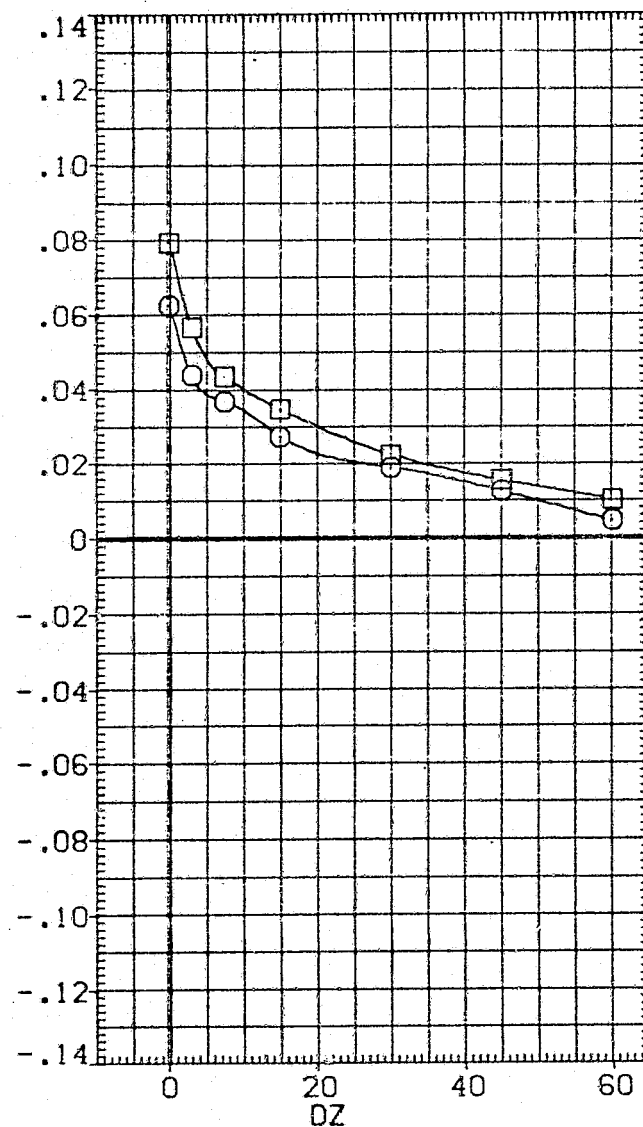
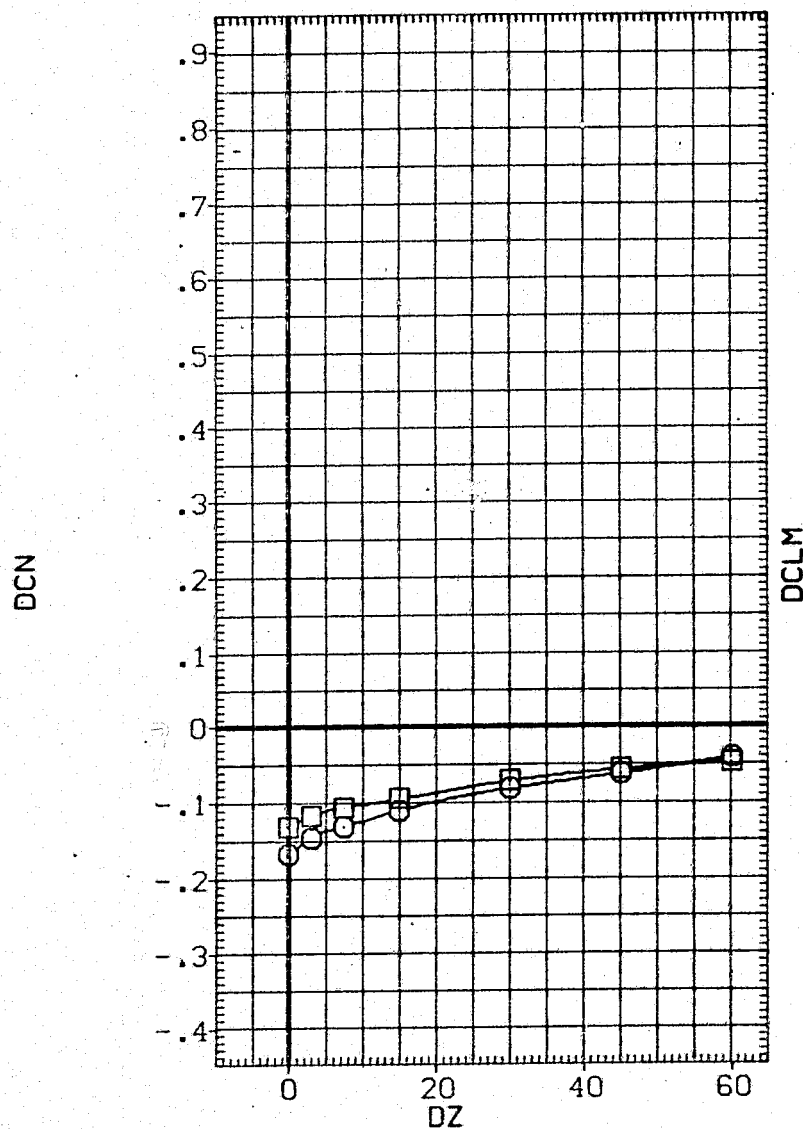


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (062 - 010)(VGN062)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	10.000	ALPHAC	4.000	BETAC	-5.000	SREF	2690.0000	SQ.FT.
□	14.000	ELV-IB	.000	ELV-OB	3.000	LREF	474.8100	IN.
		ELEVON	5.000	MACH	.600	BREF	936.6800	IN.
		PHI	.000	DX	.000	XMRP	1109.0000	IN.X0
		DY	.000	BETA0	.000	YMRP	.0000	IN.Y0
						ZMRP	375.0000	IN.Z0
						SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

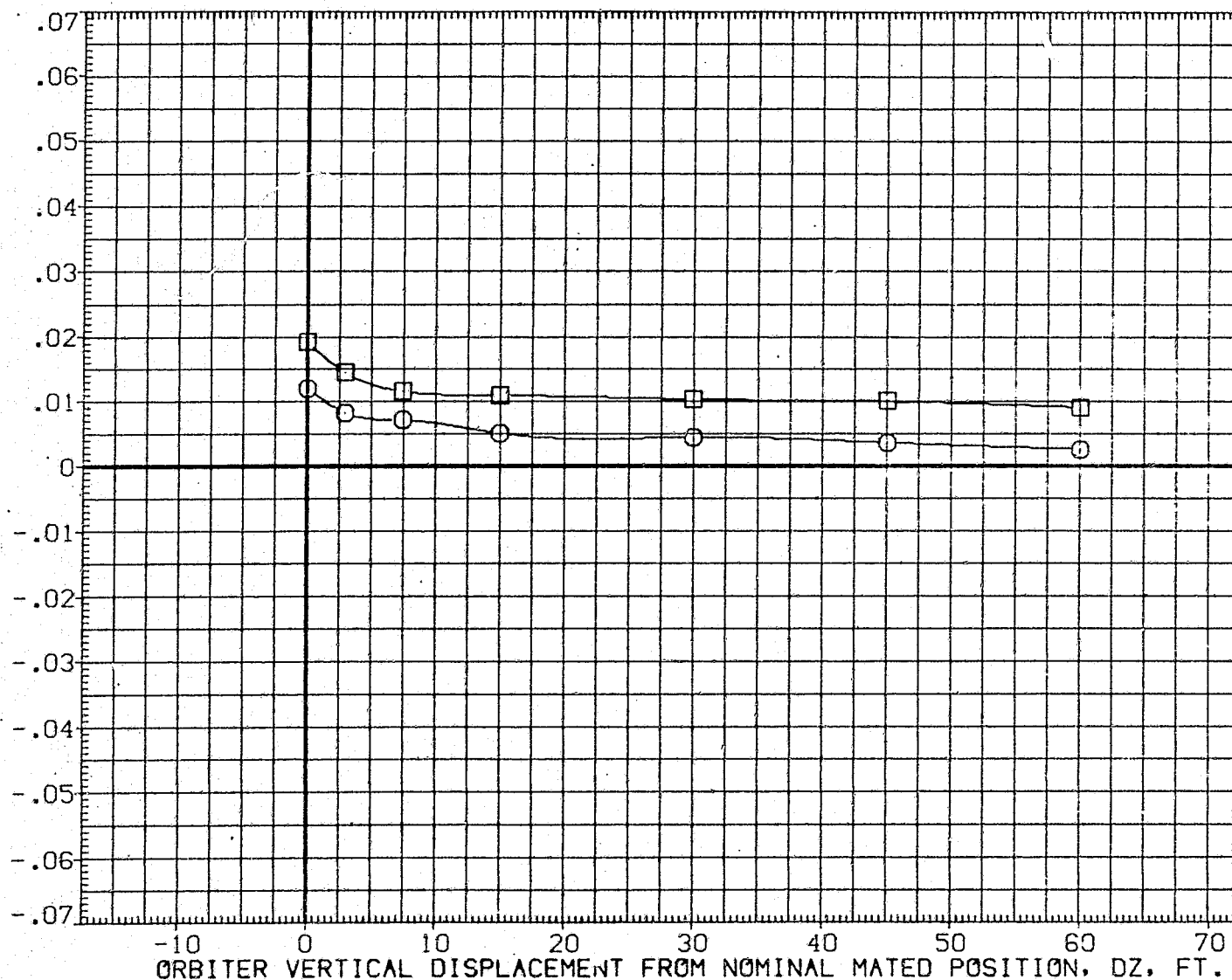


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC
○	10.000	ELV-1B	4.000	-5.000
□	14.000	ELEVON	.000	3.000
		PHI	5.000	.600
		DY	.000	.000
			BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

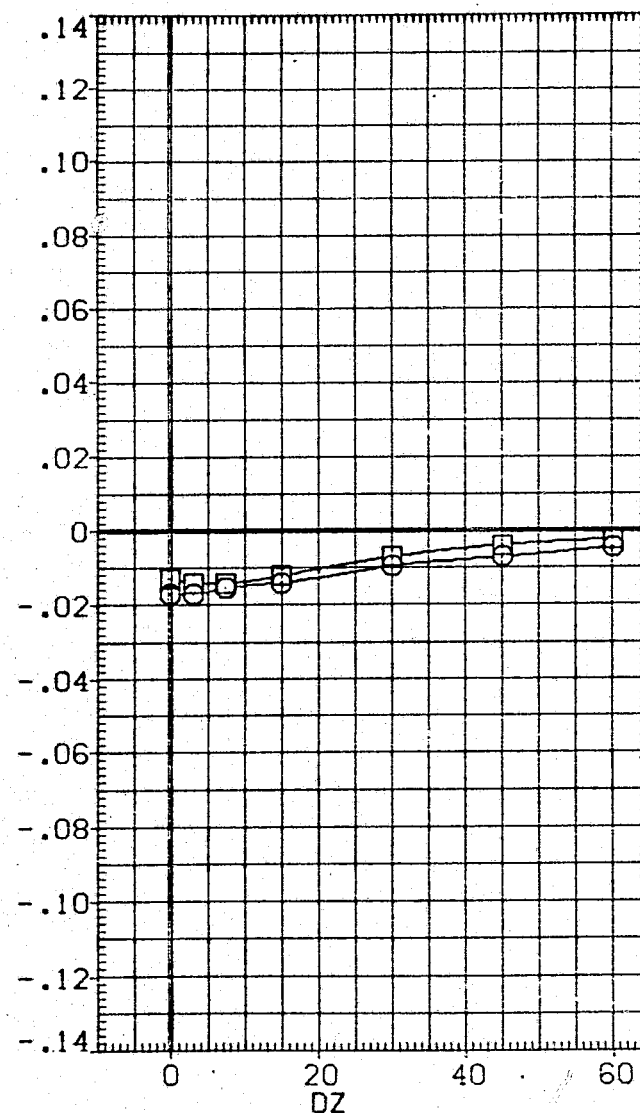
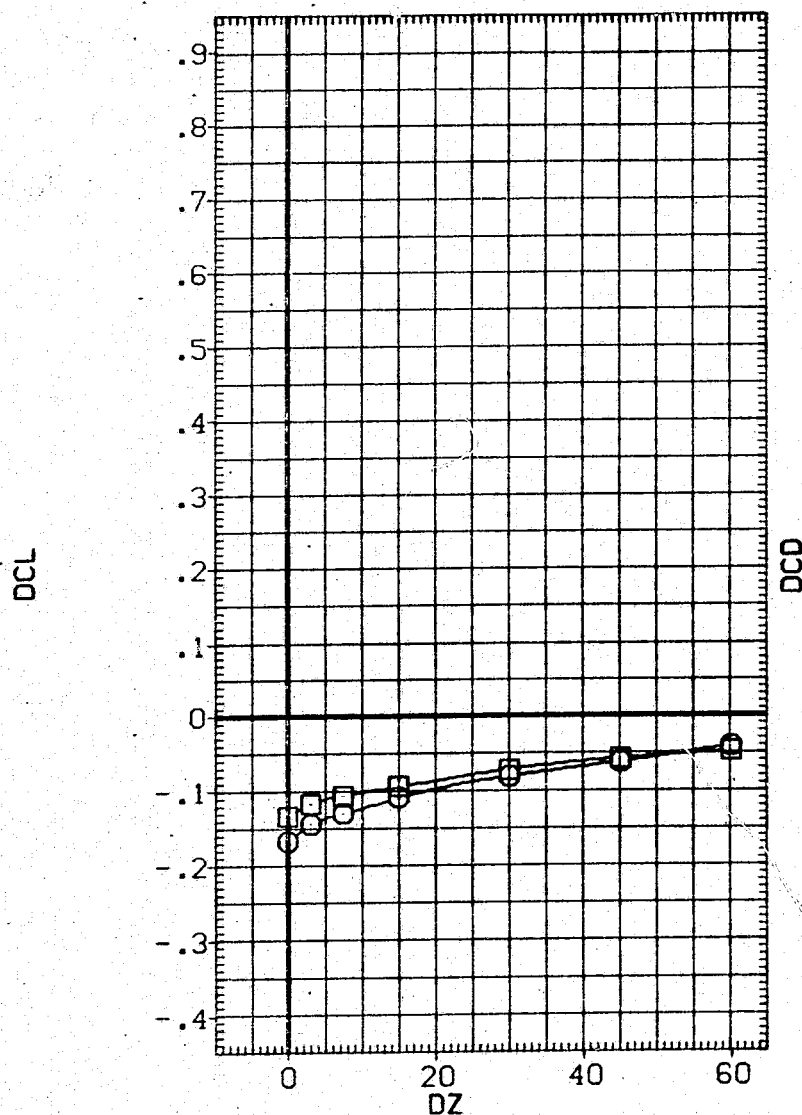


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN065)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

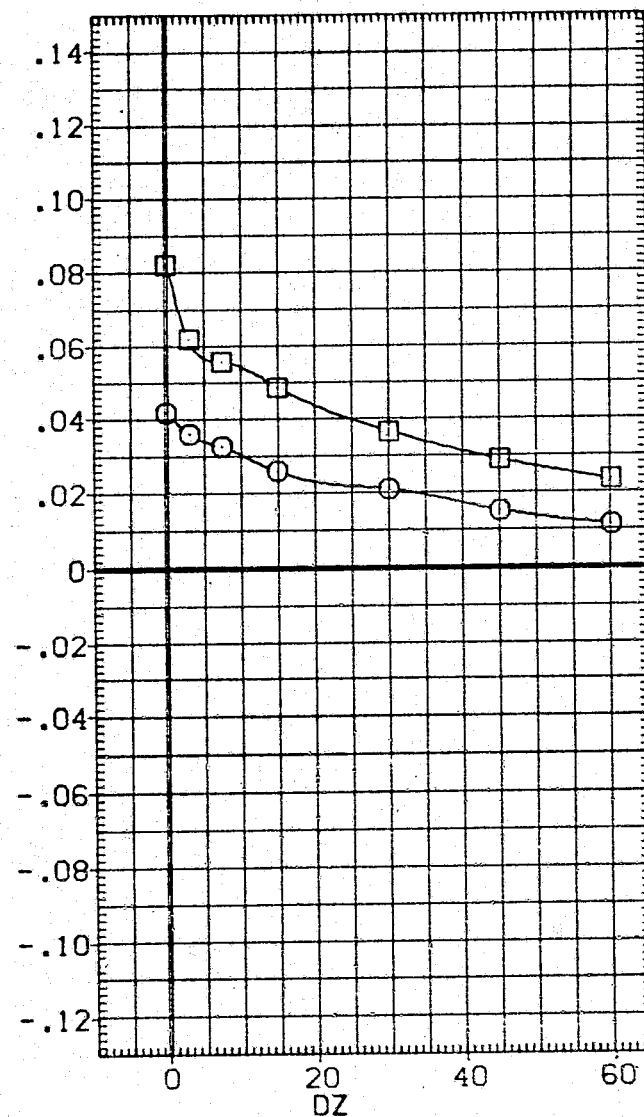
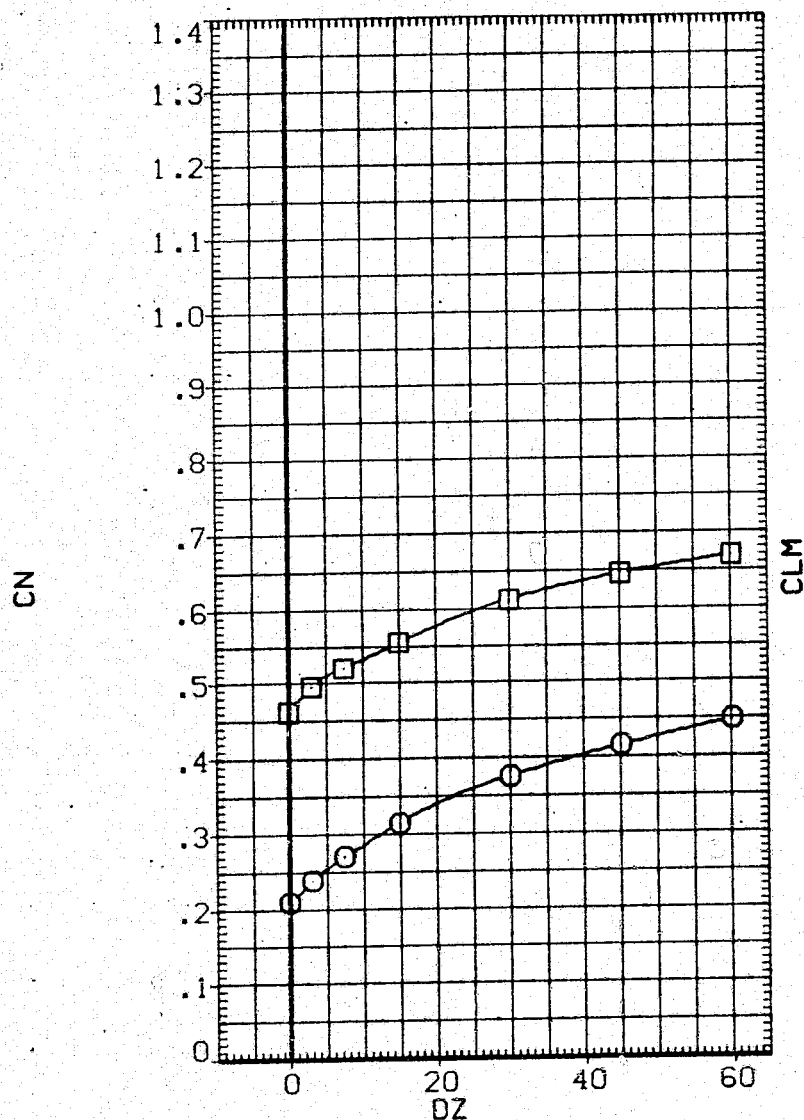


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN065)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	3.000
○	10.000	ELEVON	5.000	MACH	.600
□	14.000	BETA0	.000	BETAC	-5.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

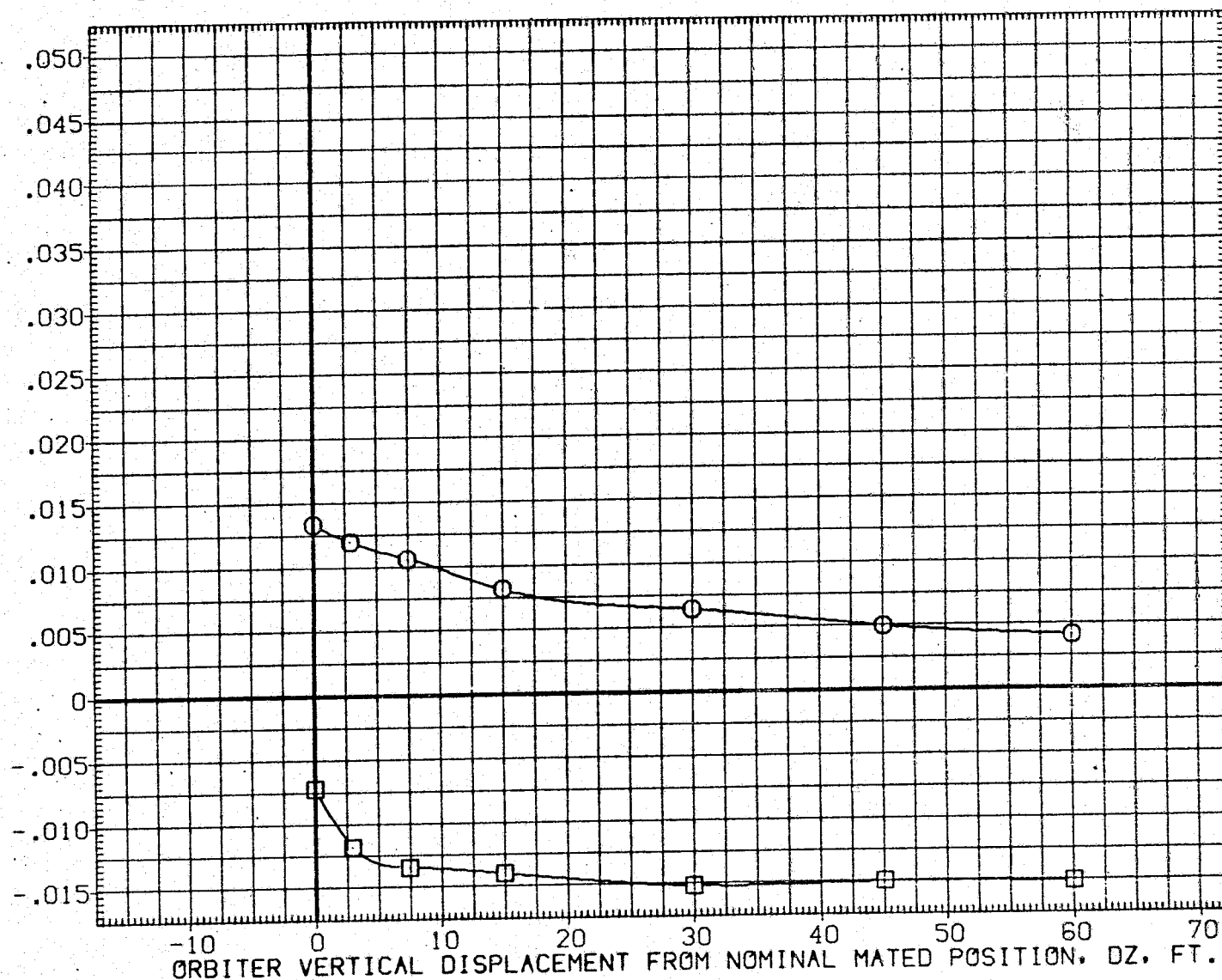


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN065)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

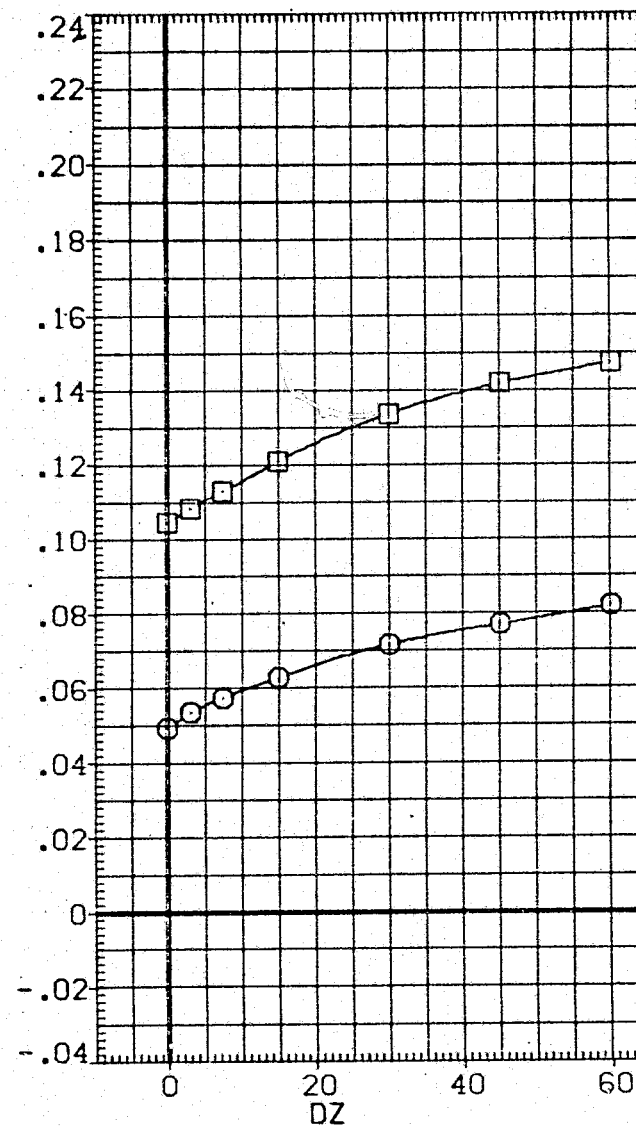
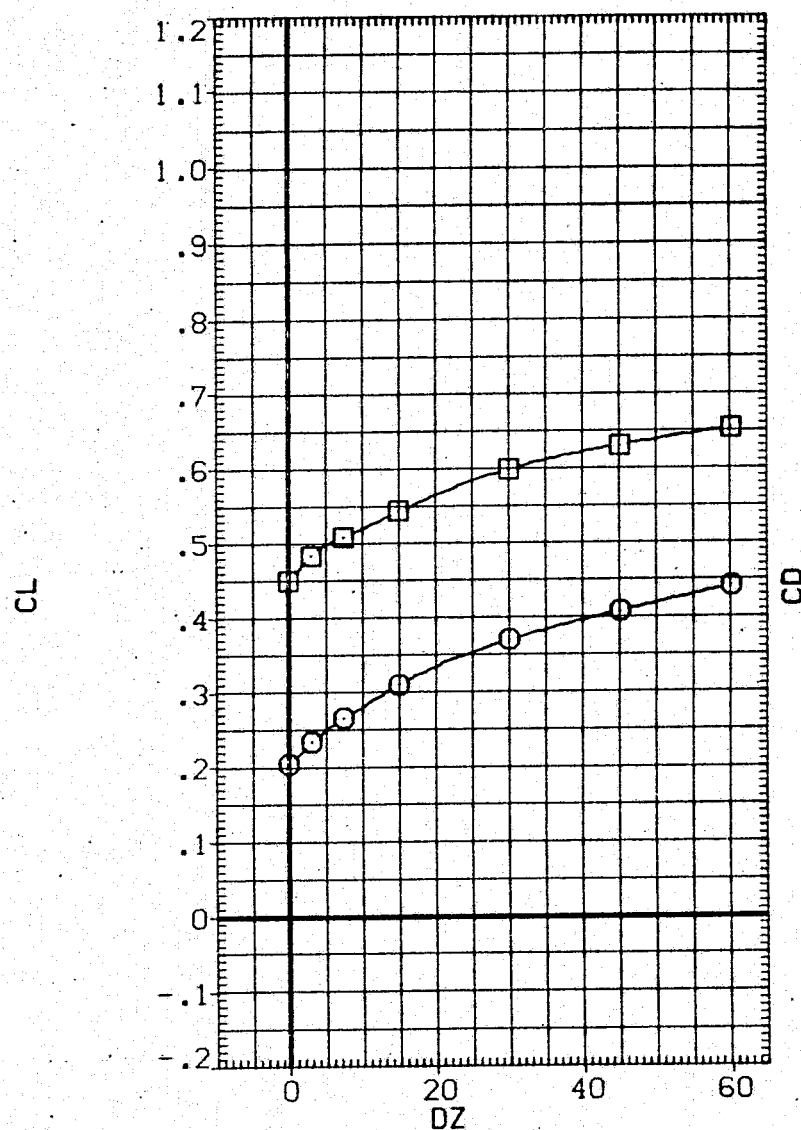


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN065)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-1B .000	ELV-0B 3.000
□	14.000	ELEVON 5.000	MACH .600
		BETA0 .000	BETAC -5.000
		PHI .000	DY .000
		DX .000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

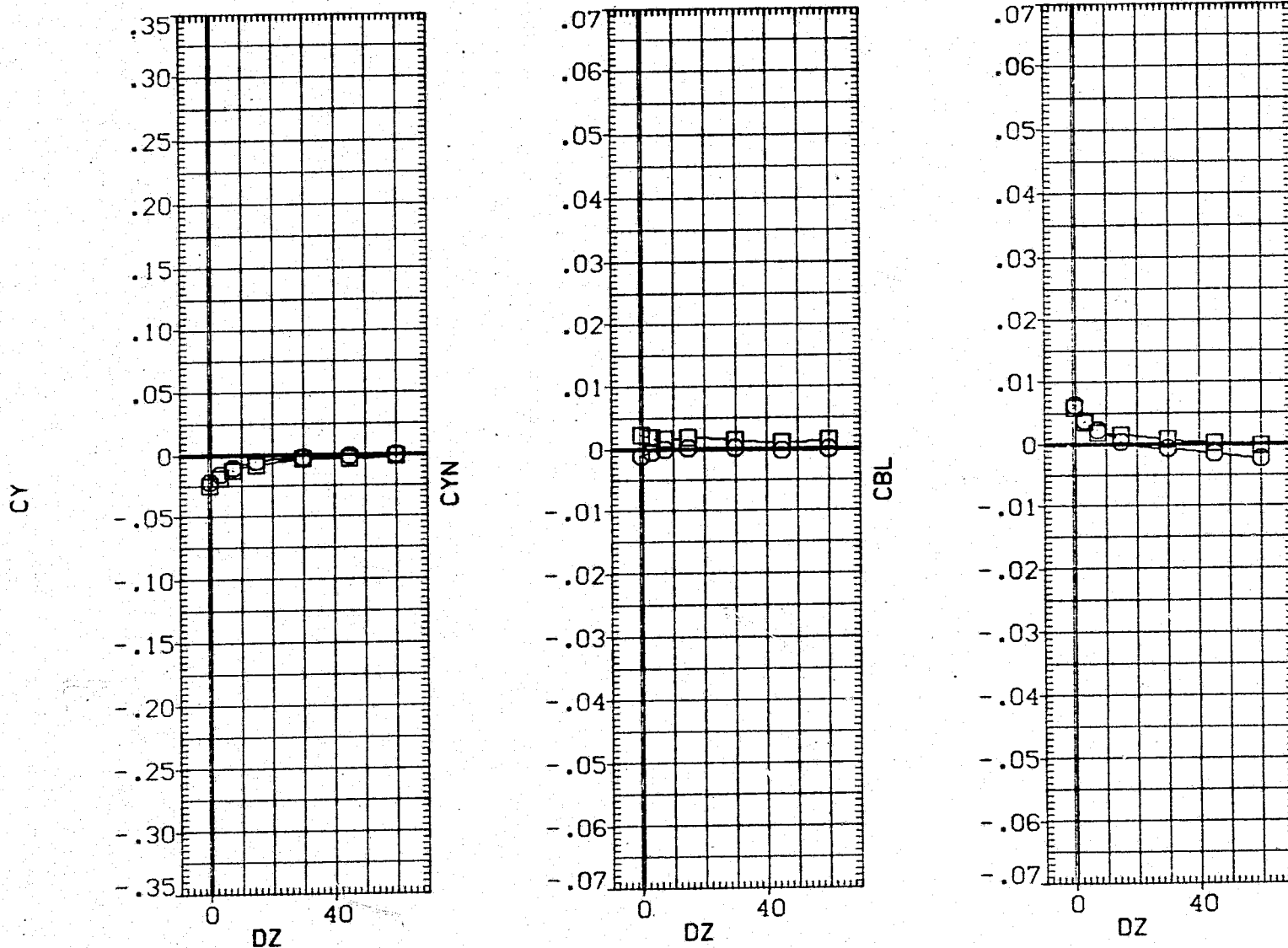


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (065 - 010)(VGN065)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

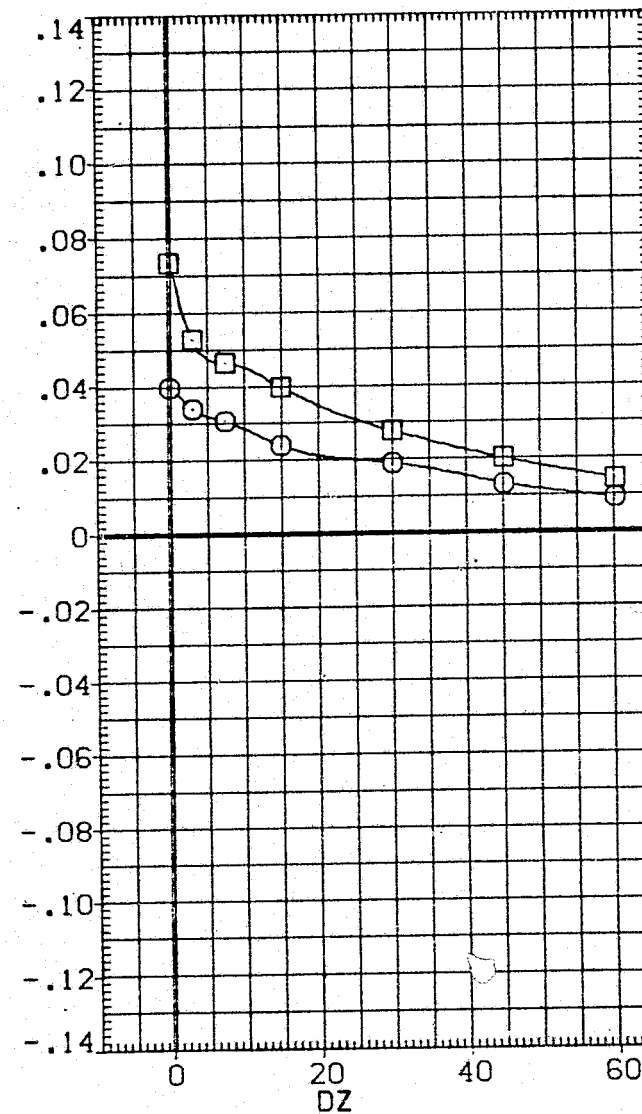
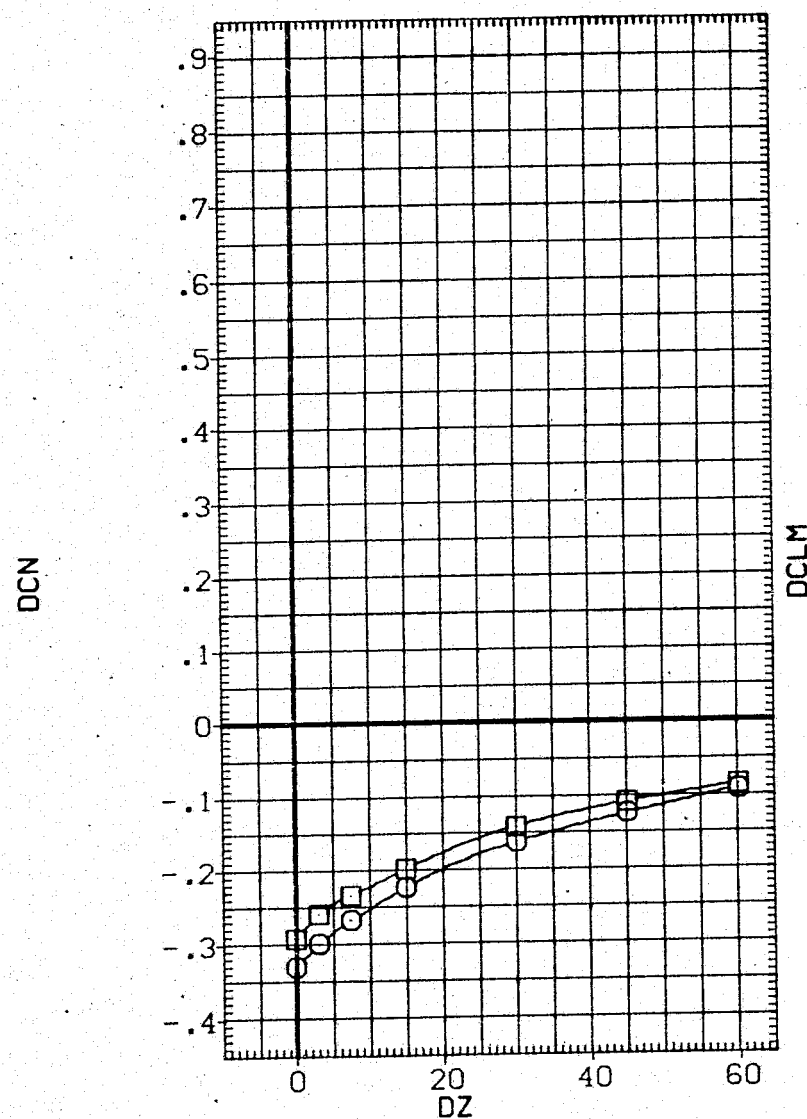


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL
○
□ALPHA0
10.000
14.000

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	-5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

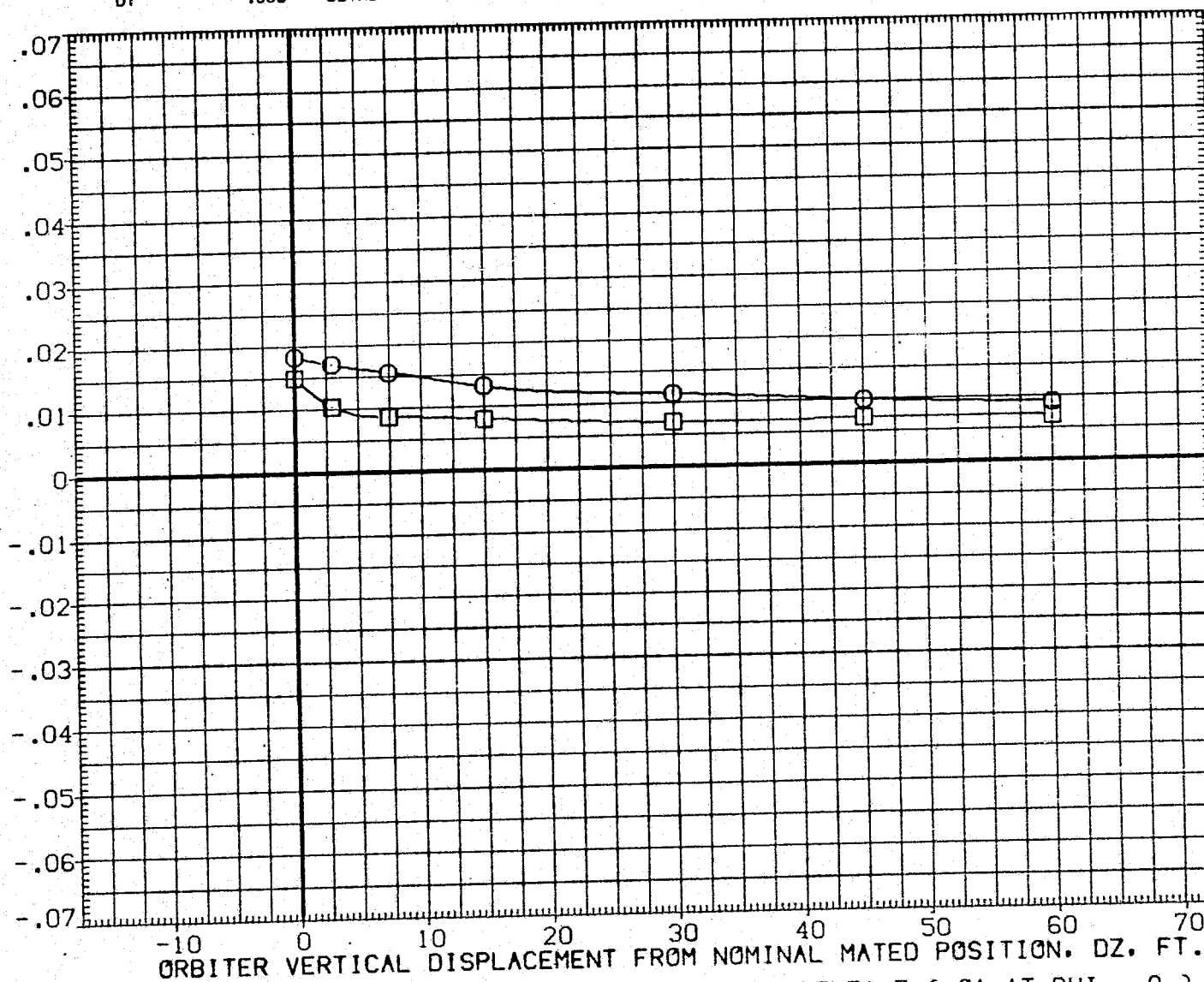


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (065 - 010) (VGN065)

SYMBOL
○
□

ALPHA0
10.000
14.000

ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000	BETAC	-5.000
.000	ELV-OB	3.000
5.000	MACH	.600
.000	DX	.000
.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

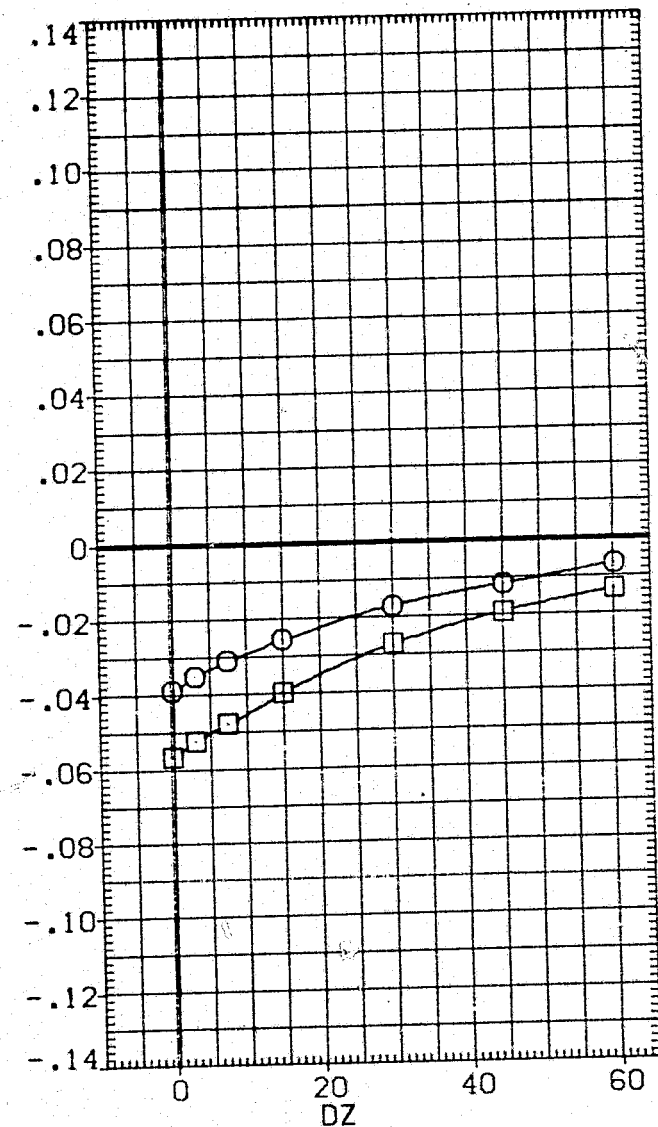
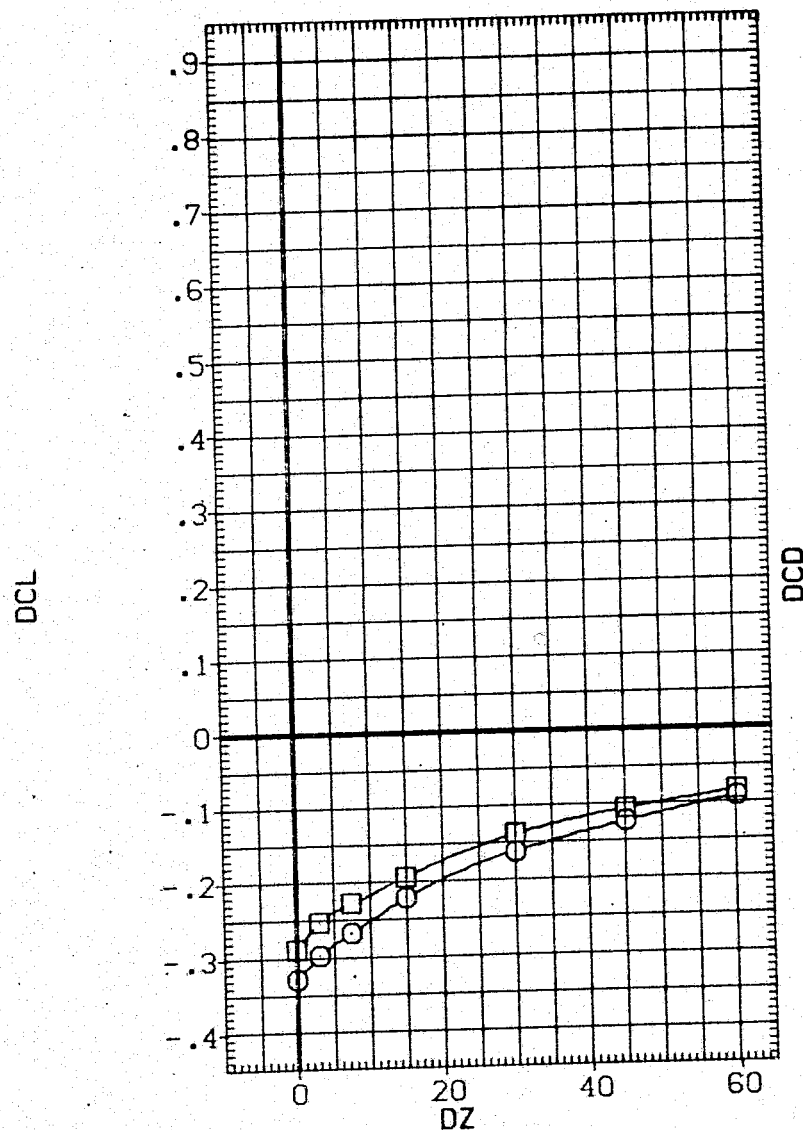


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.XC
YMRF	.0000	IN.YO
ZMRF	375.0000	IN.ZO
SCALE	.0300	

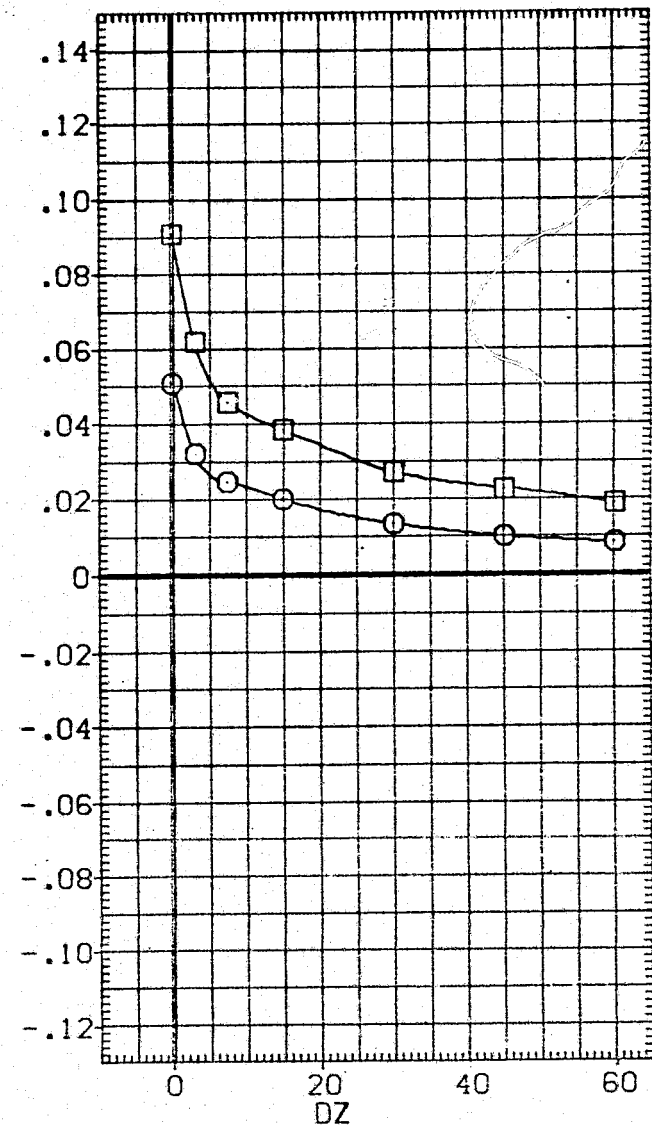
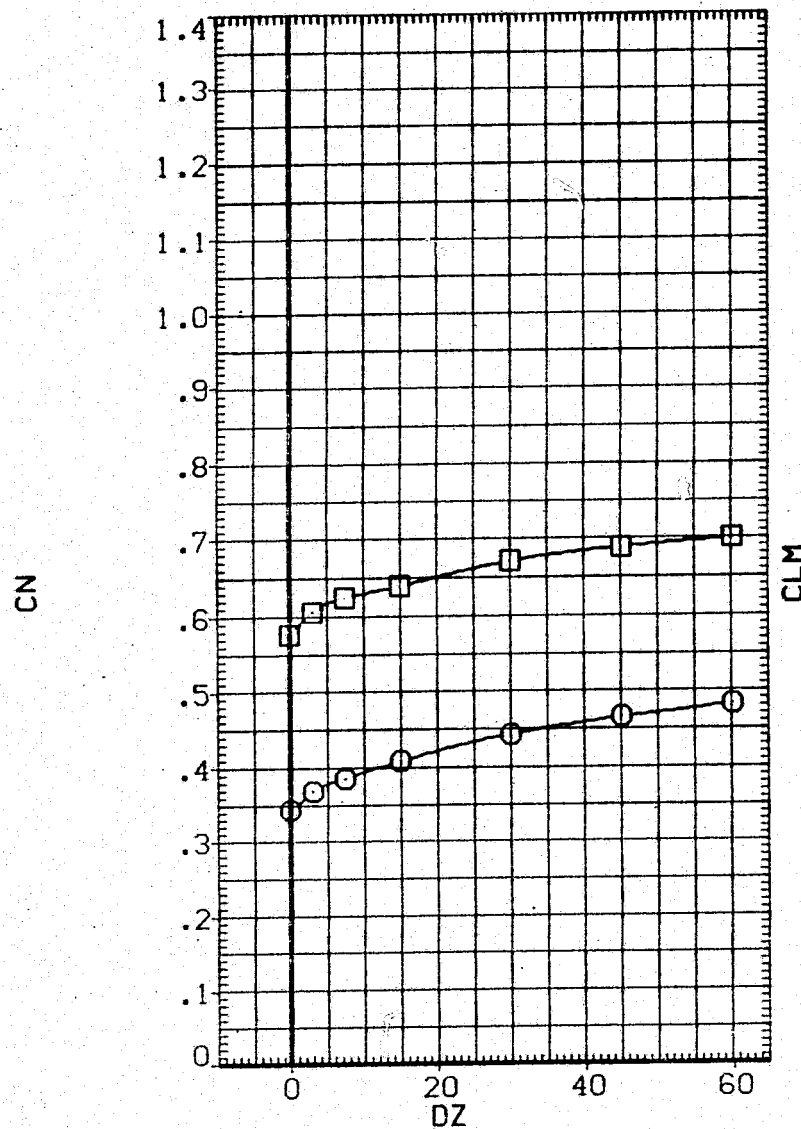


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN063)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI .000 DY .000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

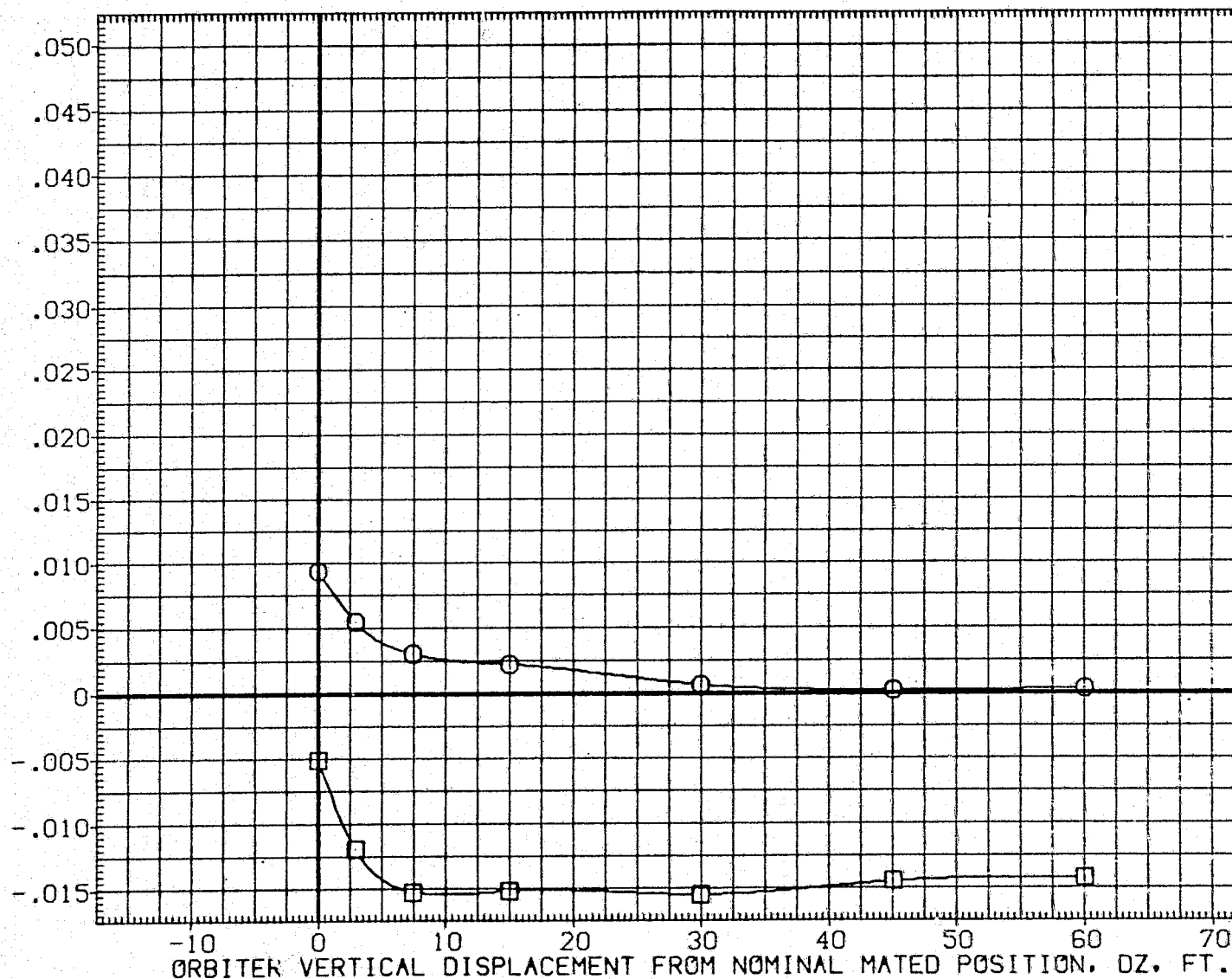


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

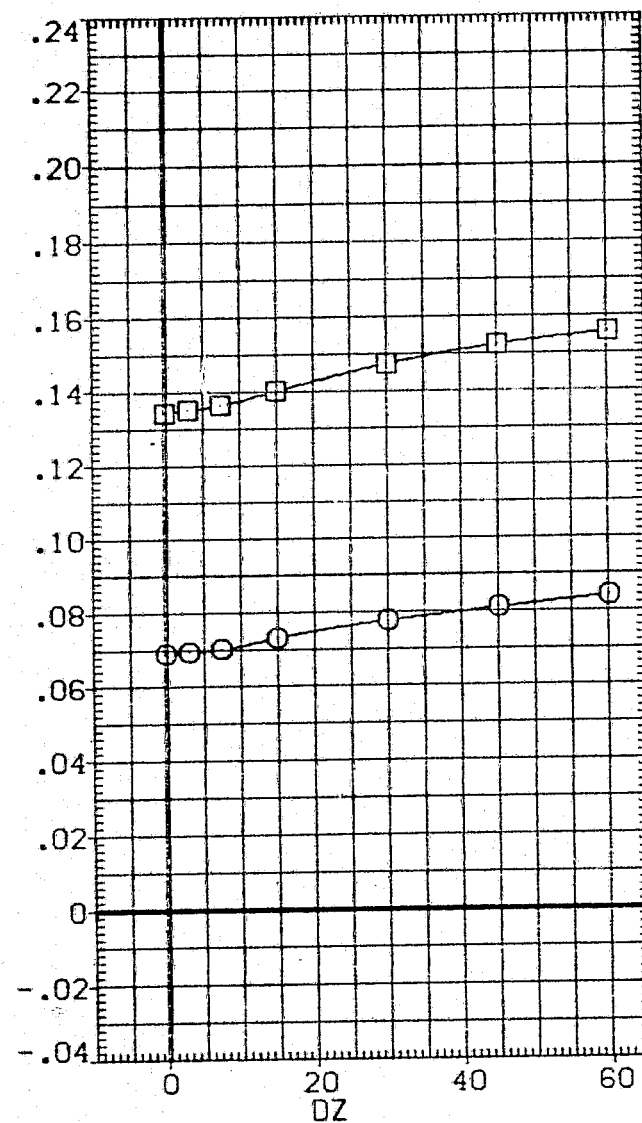
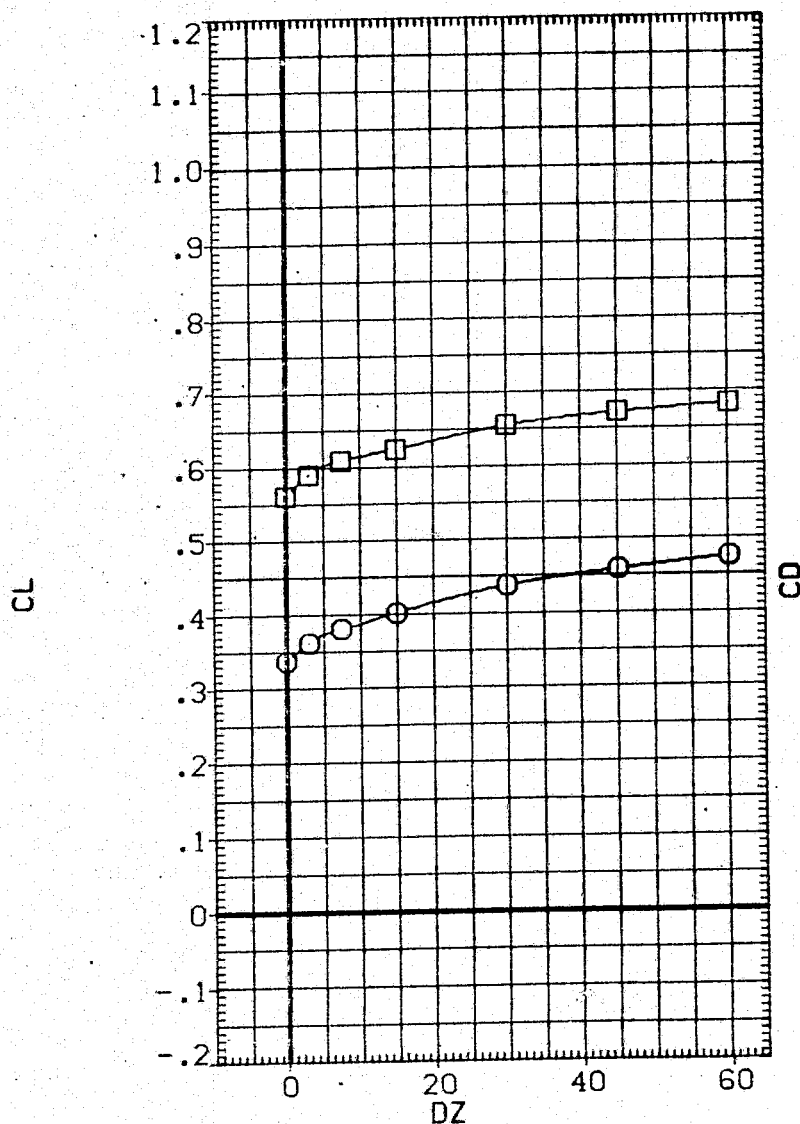


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN063)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000	ELEVON	.000	MACH	3.000
□	14.000	BETA0	5.000	BETAC	.600
		PHI	.000	DY	-5.000
		DX	10.000	ALPHAC	.000
					4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

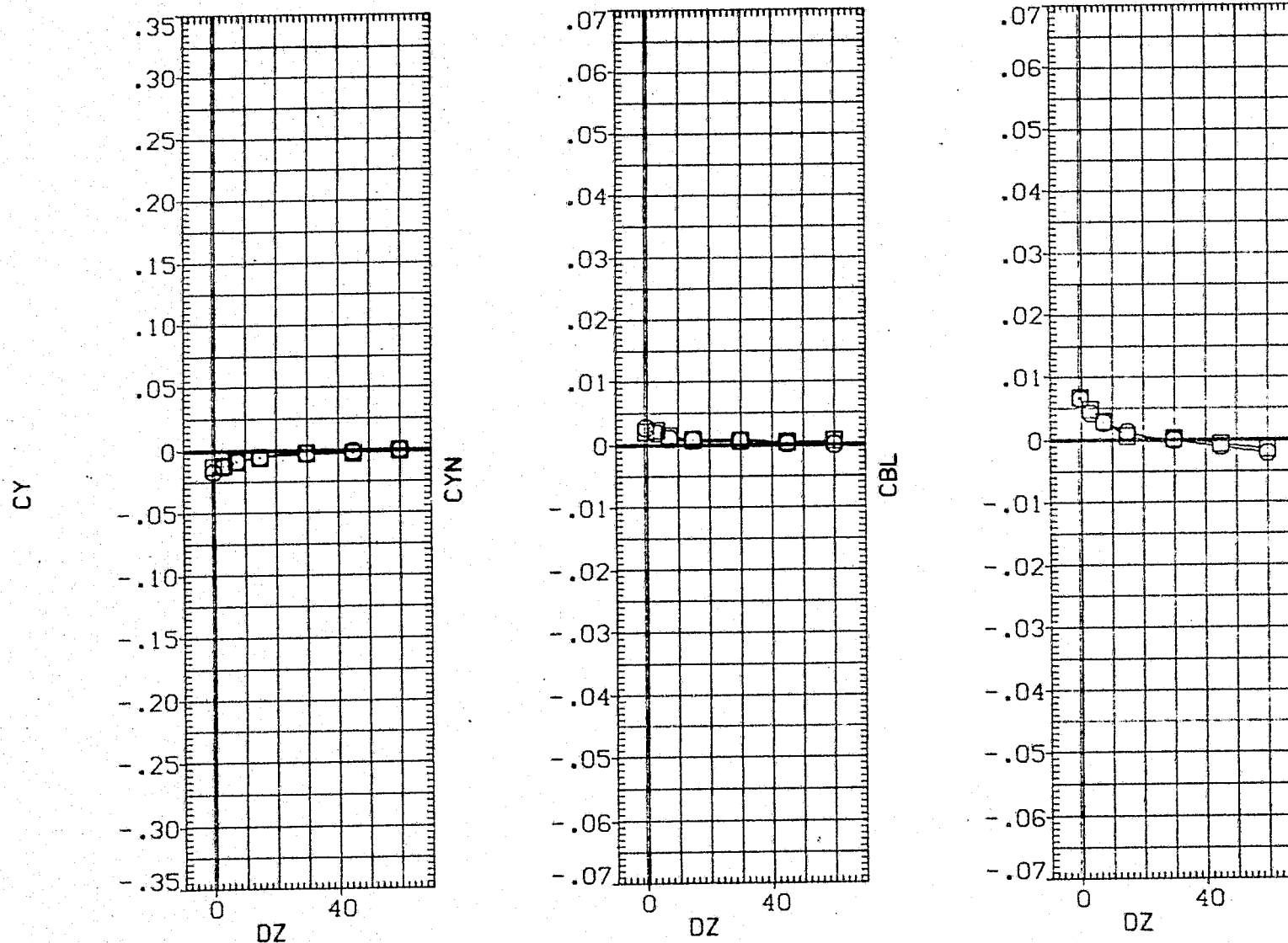


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (063 - 010) (VGN063)

SYMBOL



ALPHA0

10.000

14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

BETAC

-5.000

ELV-08

3.000

MACH

.600

DX

10.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000

50.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

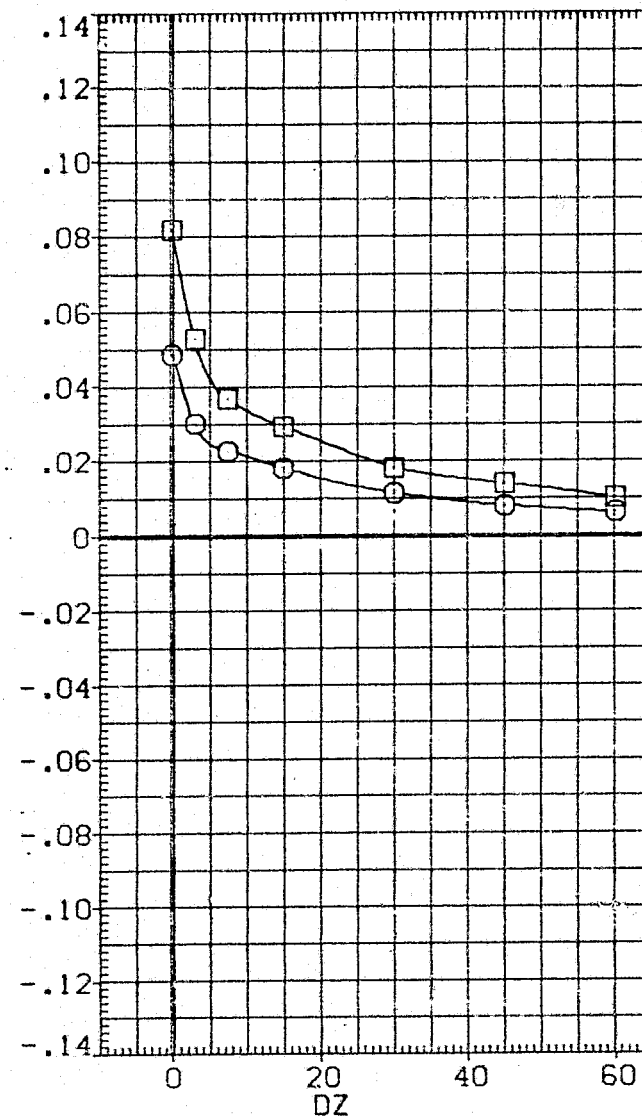
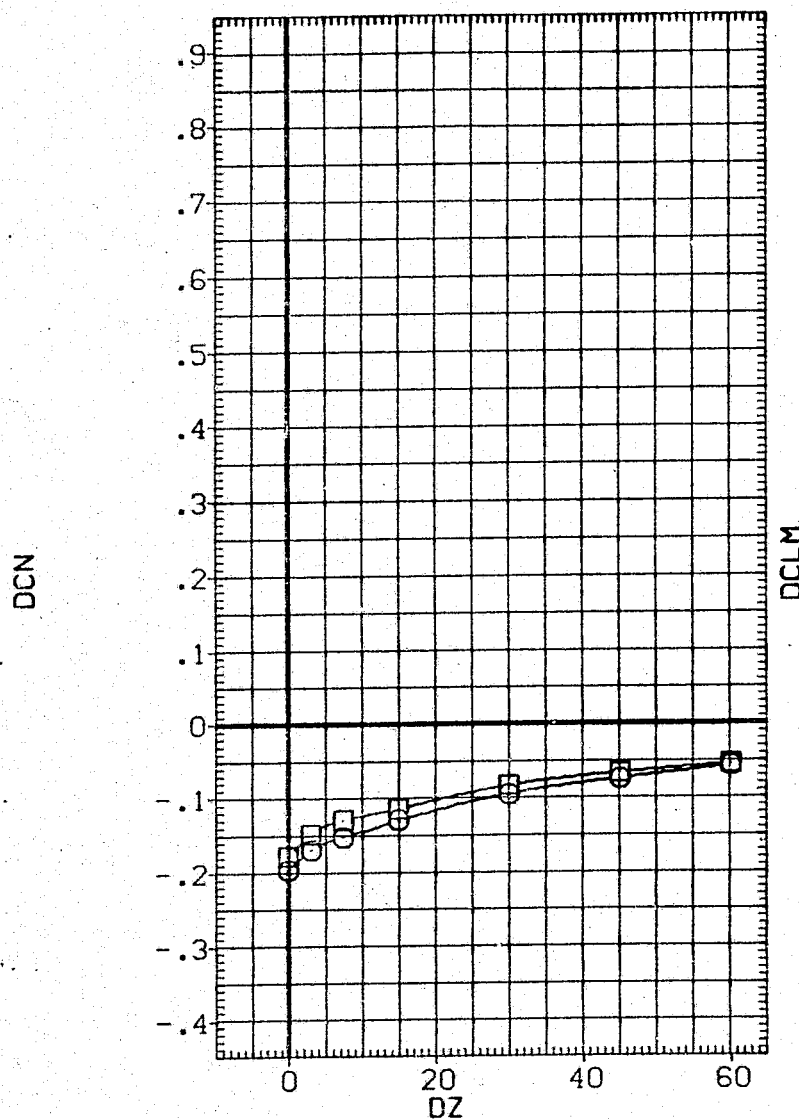


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (063 - 010) (VGN063)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

-5.000

ELV-IB

.000

ELV-OB

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

10.000

DY

.000

BETA0

.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

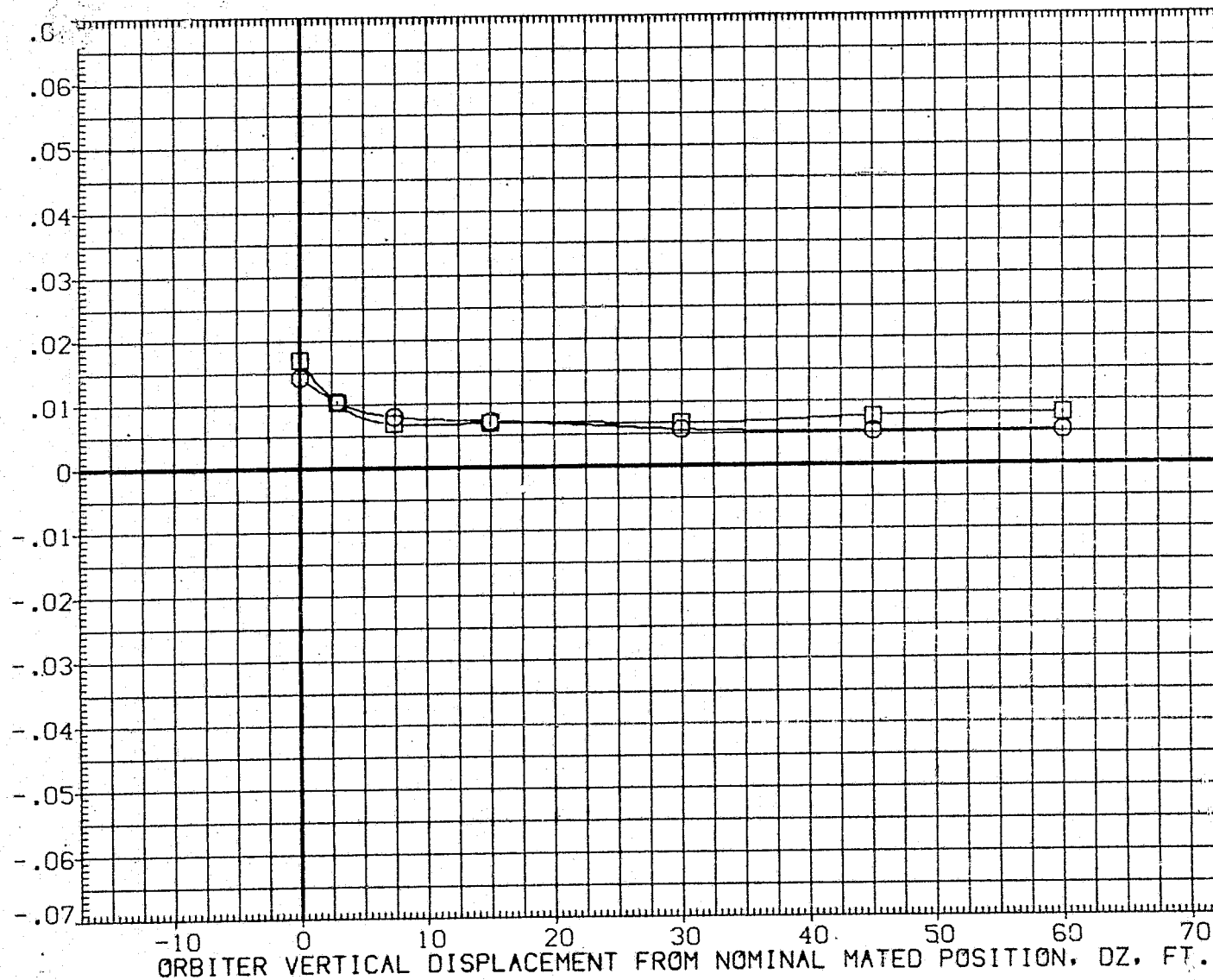


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

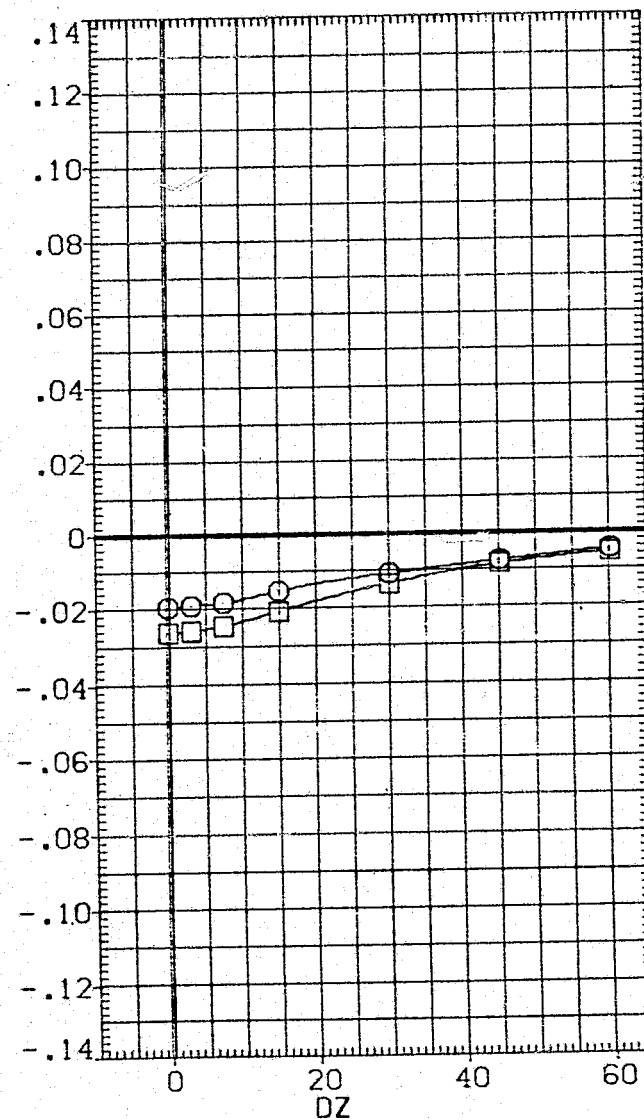
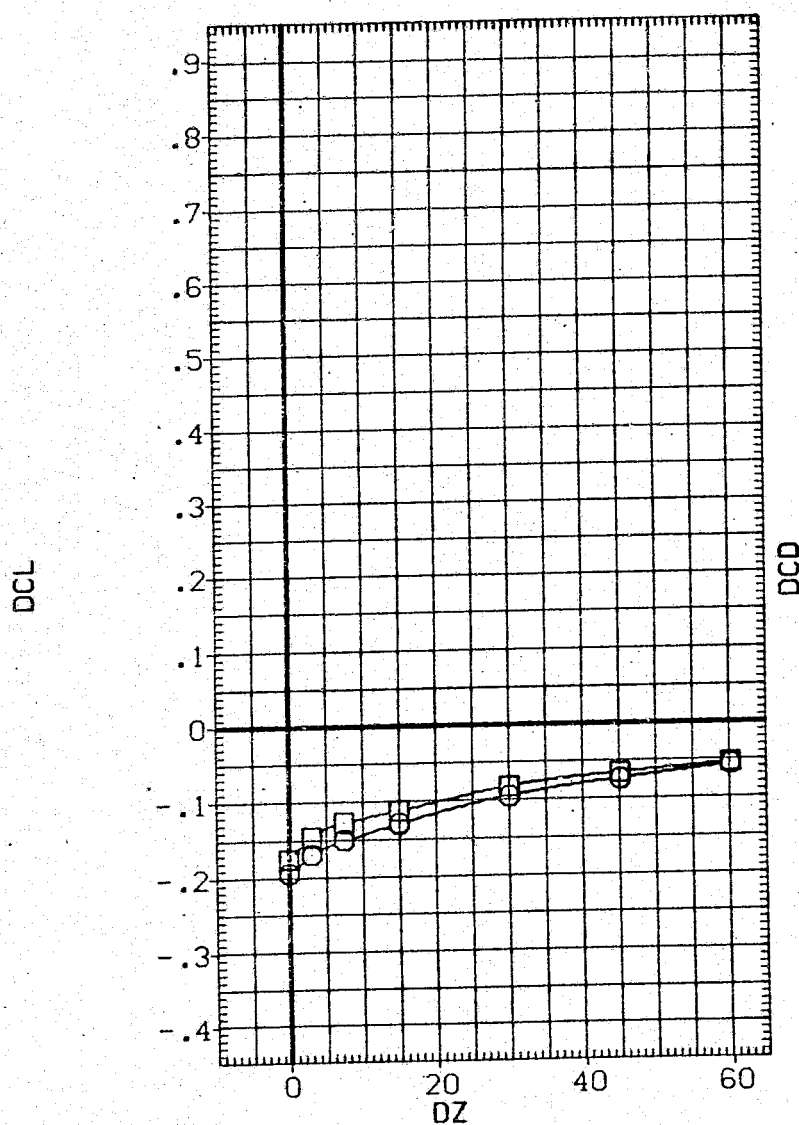


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

ORBITER DATA (NGN066)

SYMBOL		PARAMETRIC VALUES			
○	ALPHA0	ELV-1B	.000	ELV-0B	3.000
	10.000	ELEVON	5.000	MACH	.600
□	14.000	BETA0	.000	BETAC	-5.000
		PHI	.000	OY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

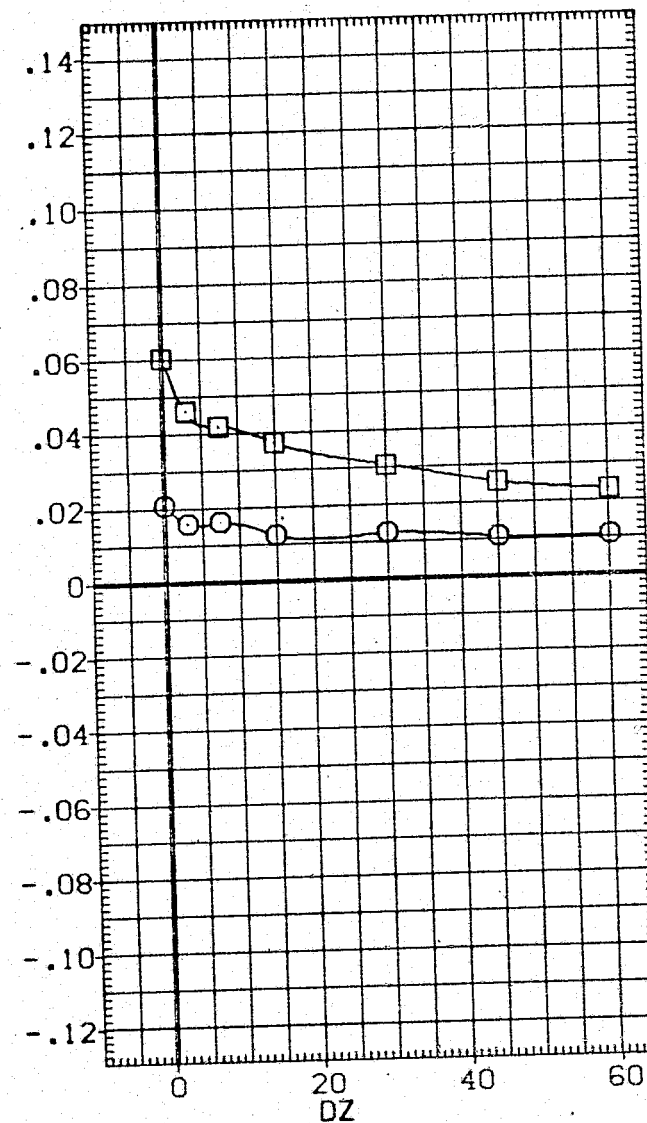
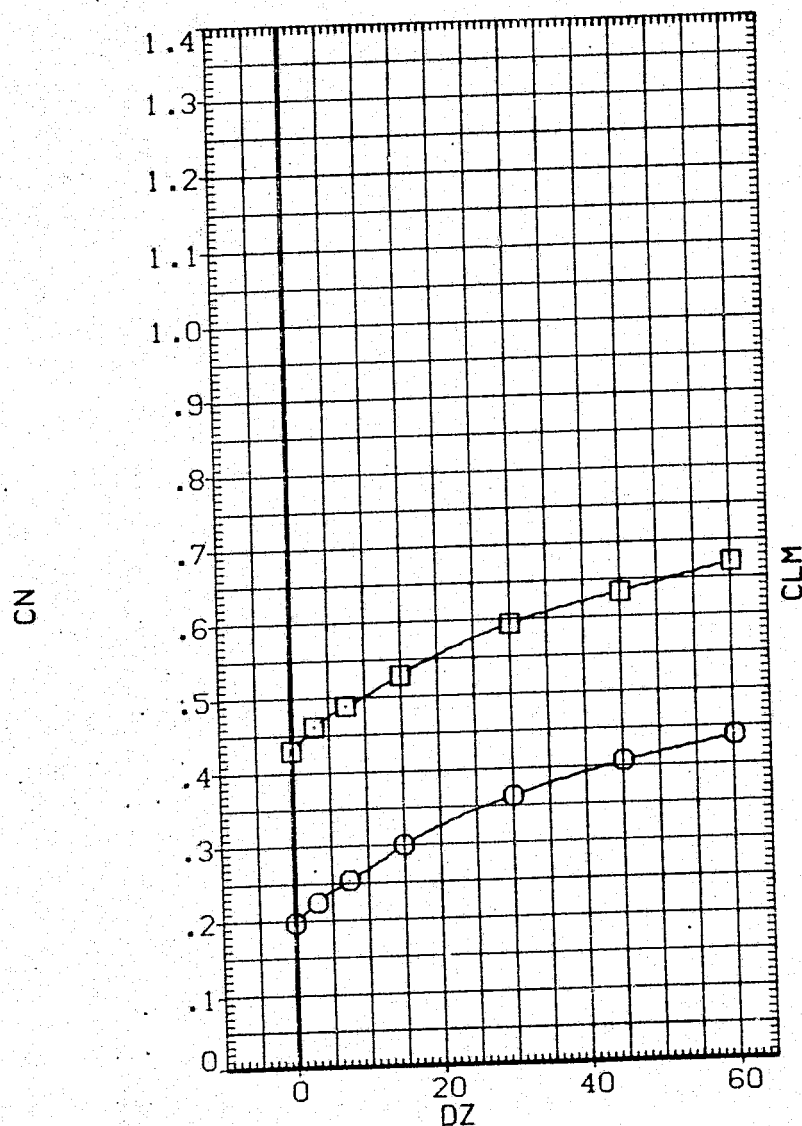


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
	BETA0 .000	BETAC -5.000
	PHI .000	DY .000
	DX 10.000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

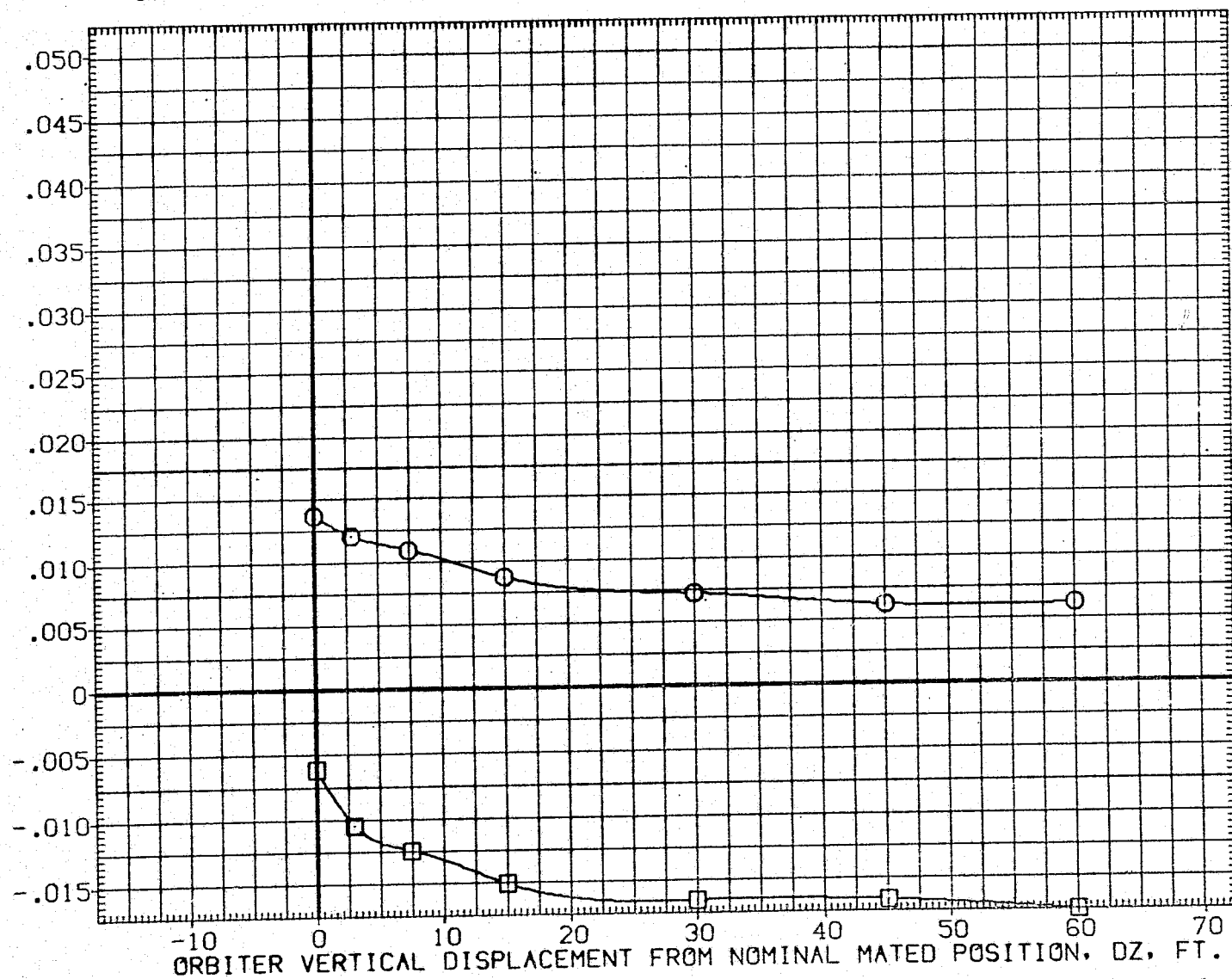


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN066)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETA0 -5.000
		PHI .000 DY .000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

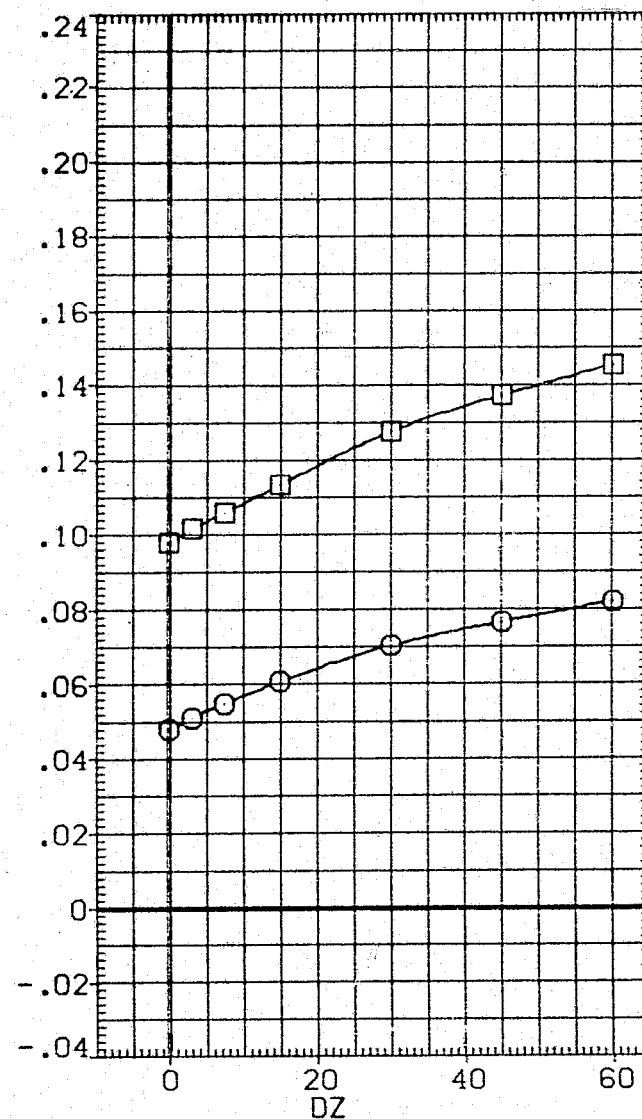
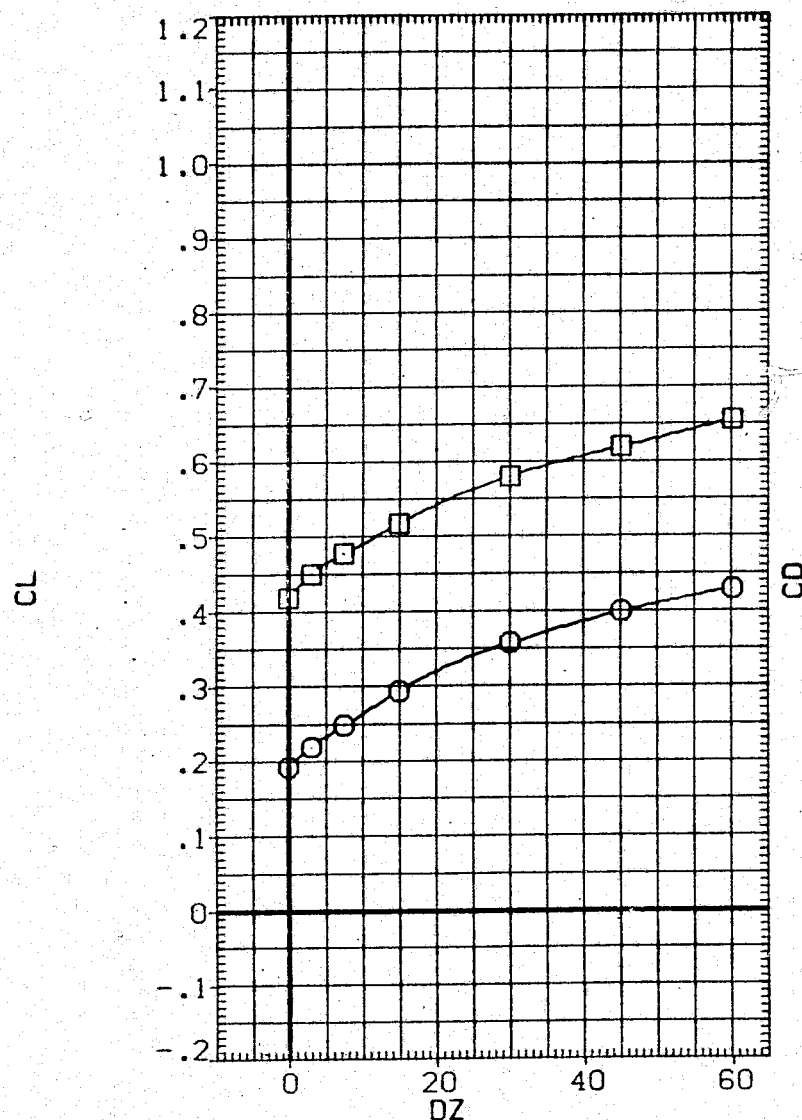


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-1B .000	ELV-0B 3.000
□	14.000	ELEVON 5.000	MACH .600
		BETA0 .000	BETAC -5.000
		PHI .000	DY .000
		DX 10.000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

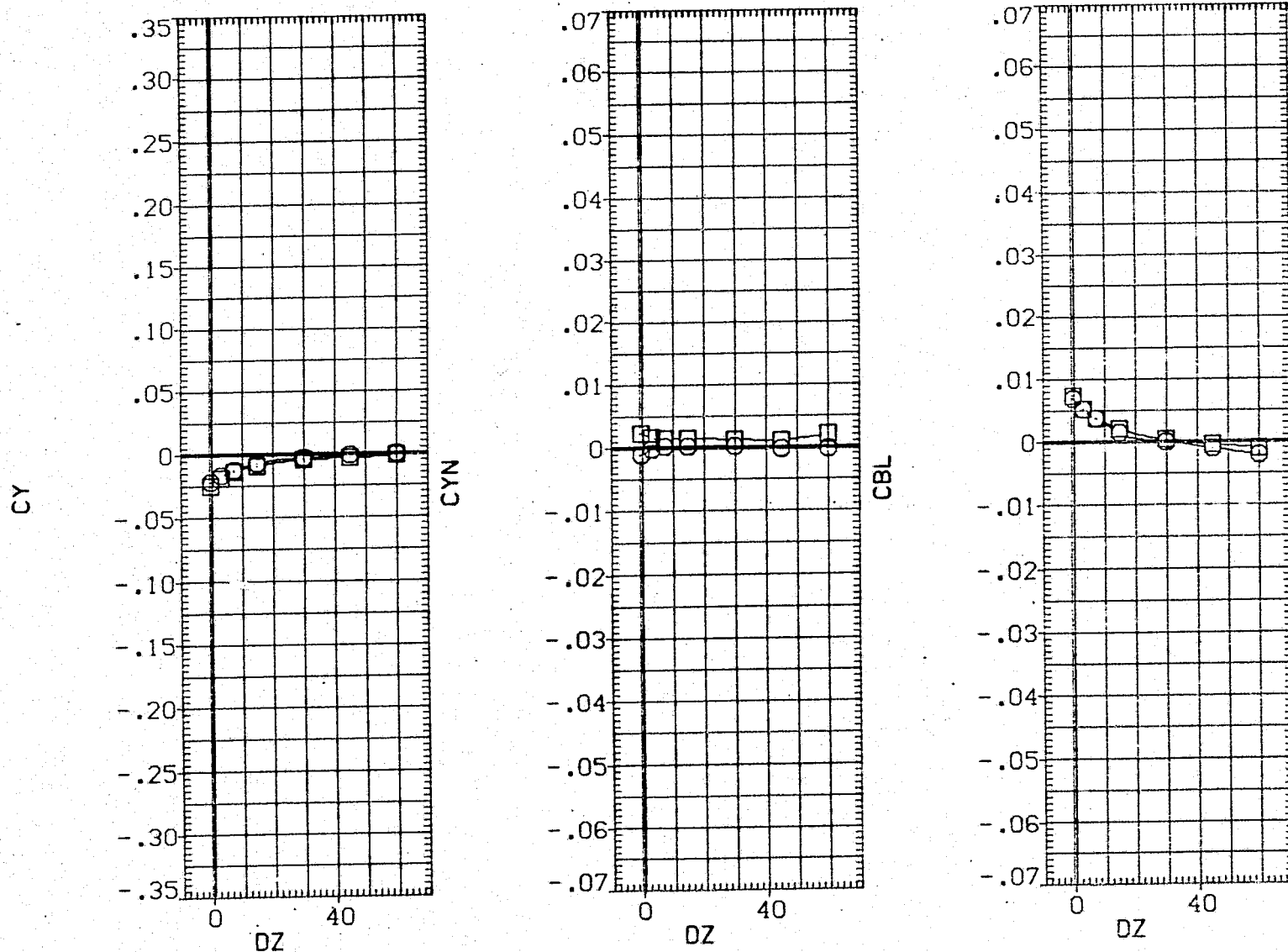


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (066 - 010) (VGN066)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	-5.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

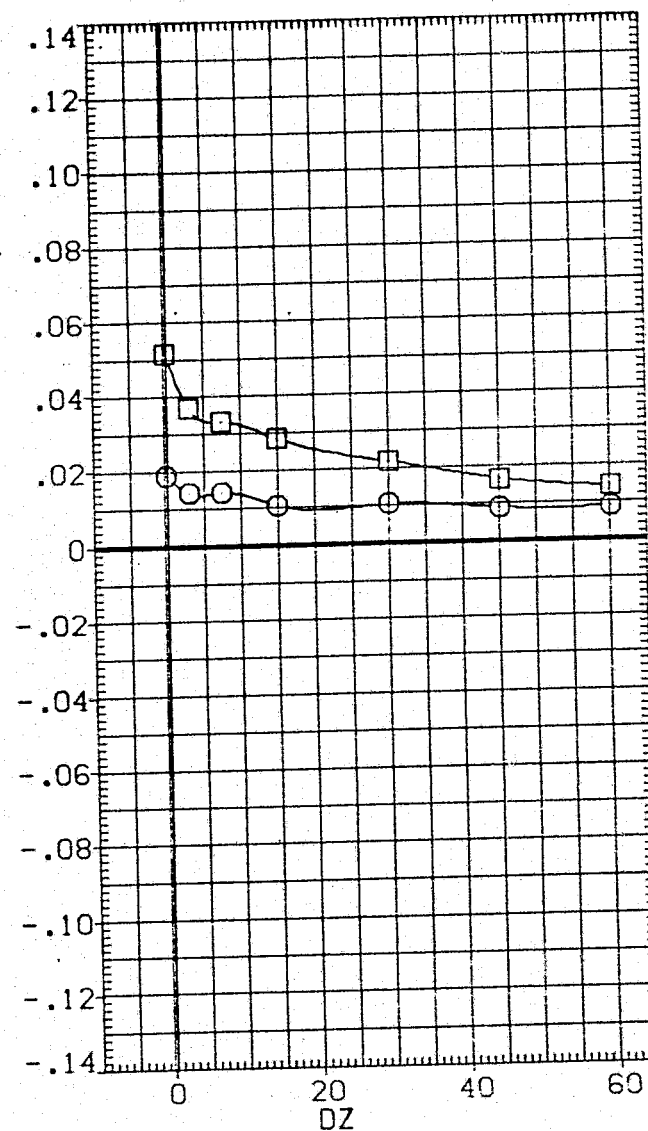
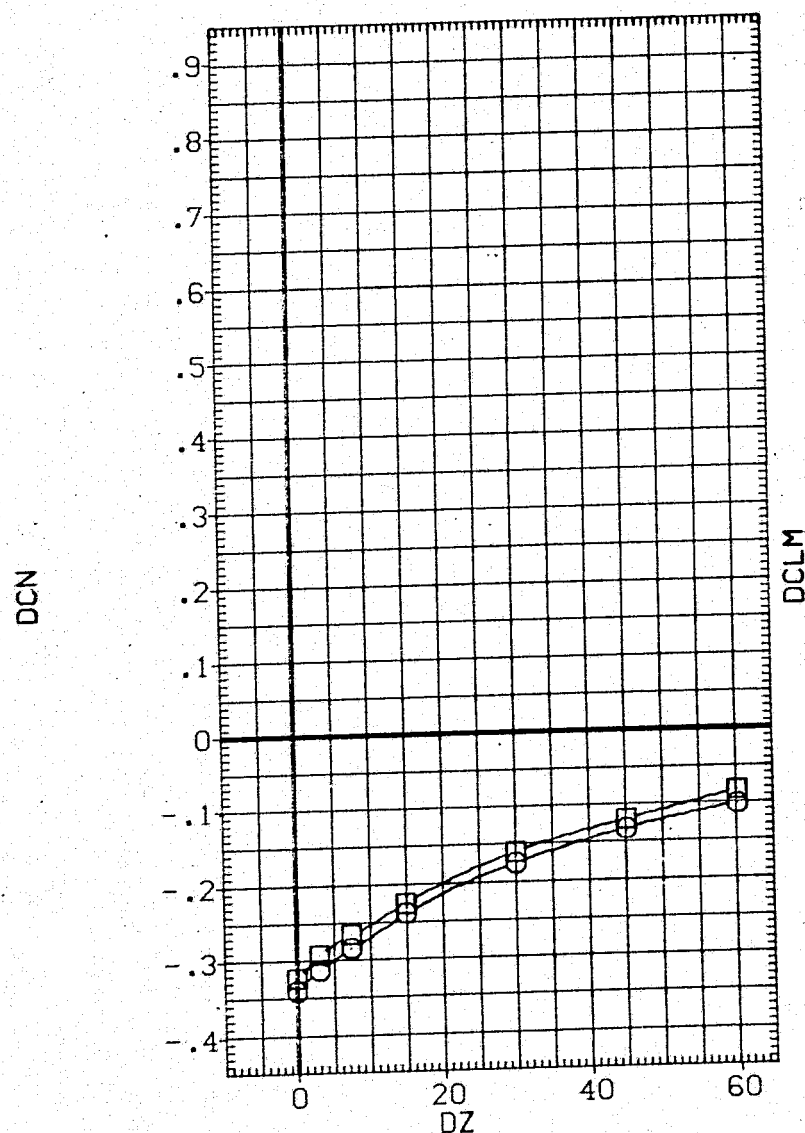


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES				REFERENCE INFORMATION		
	10.000	ALPHAC	8.000	BETAC	-5.000		SREF	2690.0000	50.FT.
○	14.000	ELV-1B	.000	ELV-0B	3.000		LREF	474.8100	IN.
□		ELEVON	5.000	MACH	.600		BREF	936.6800	IN.
		PHI	.000	DX	10.000		XMRP	1109.0000	IN.X0
		DY	.000	BETA0	.000		YMRP	.0000	IN.Y0
							ZMRP	375.0000	IN.Z0
							SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

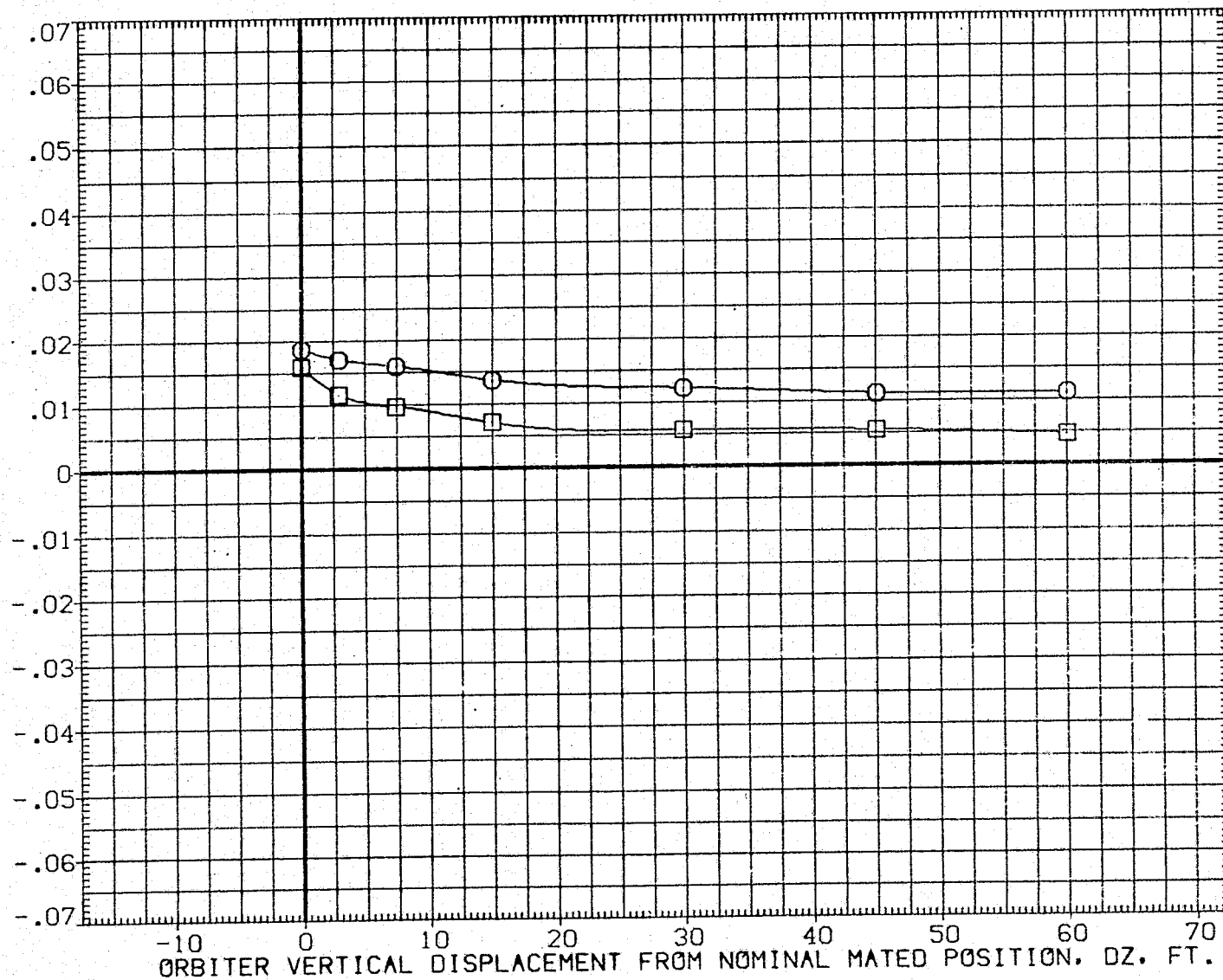


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (066 - 010) (VGN066)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETAO .000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

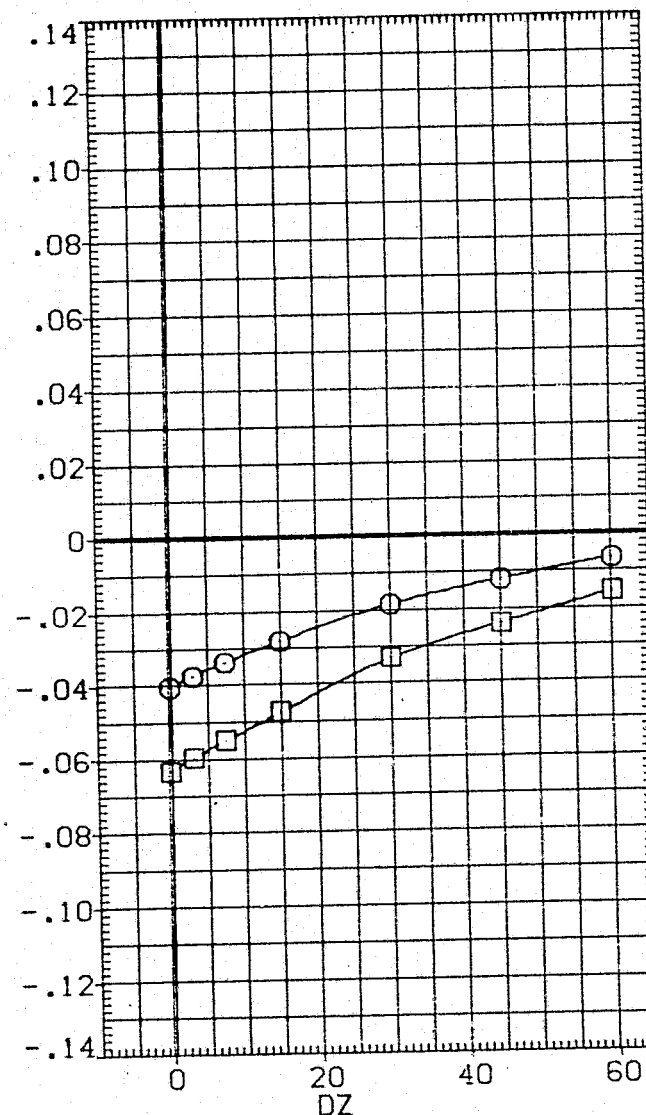
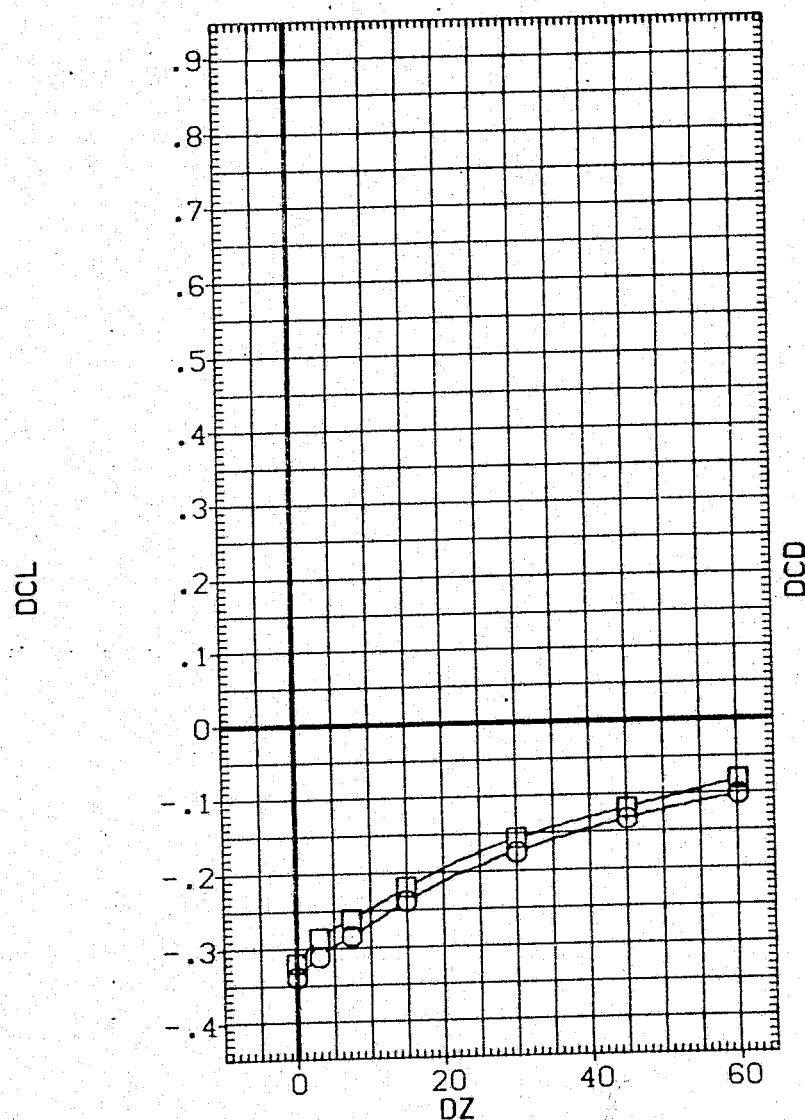


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN064)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	BETAC	-5.000
		DX	20.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

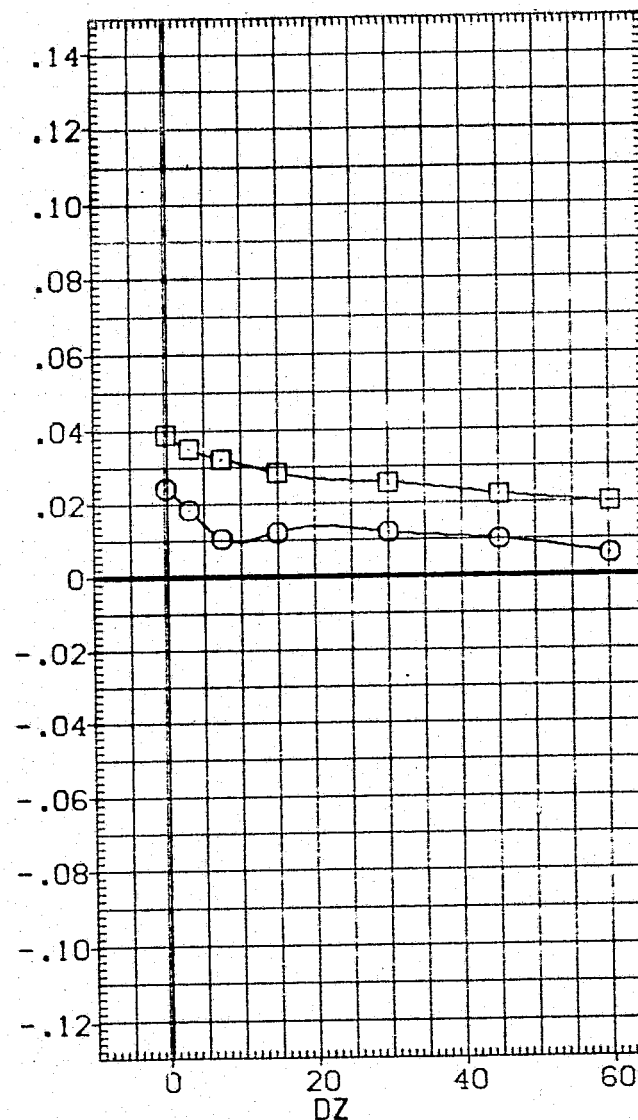
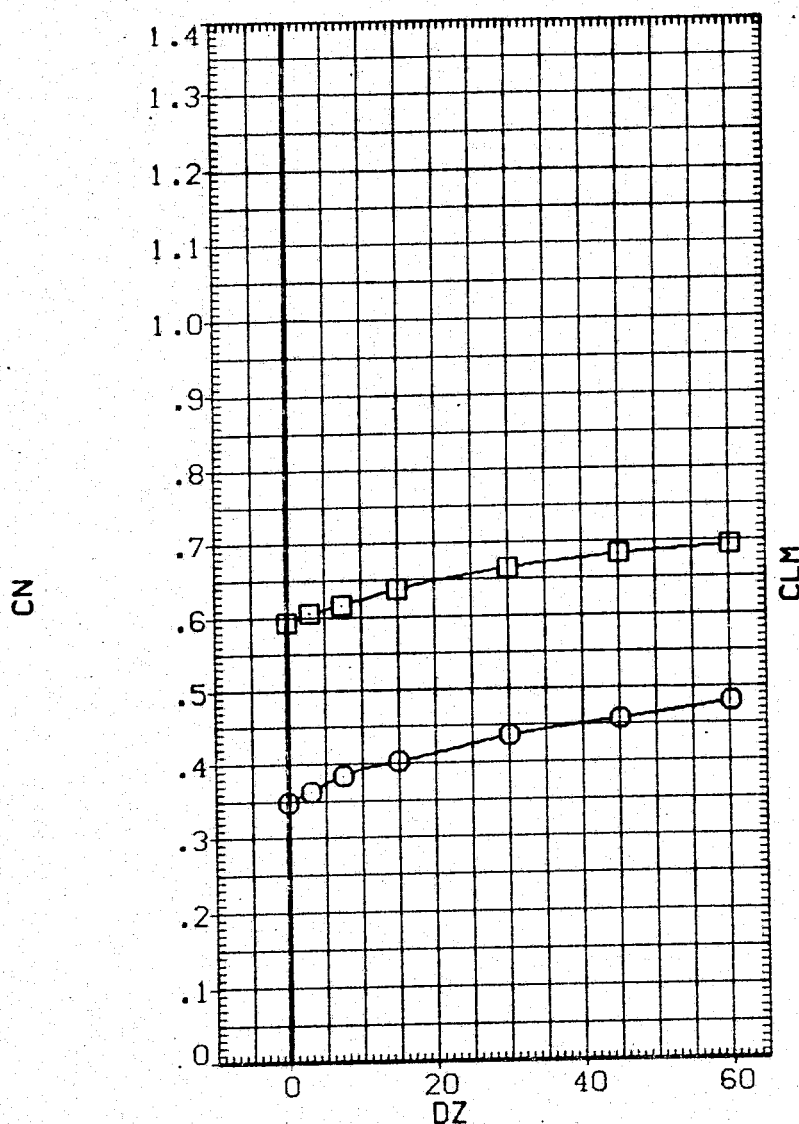


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 .747/1 01 S1

ORBITER DATA(NGN064)

SYMBOL

ALPHA0

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□

10.000

ELV-1B

.000

ELV-0B

3.000

SREF 2690.0000

50.FT.

14.000

ELEVON

5.000

MACH

.600

LREF 474.8100

IN.

BETA0

.000

PHI

.000

BREF 936.6800

IN.

OY

.000

BETAC

-5.000

XMRP 1109.0000

IN.X0

DX

20.000

ALPHAC

4.000

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE

.0300

AXIAL FORCE COEFFICIENT, CA

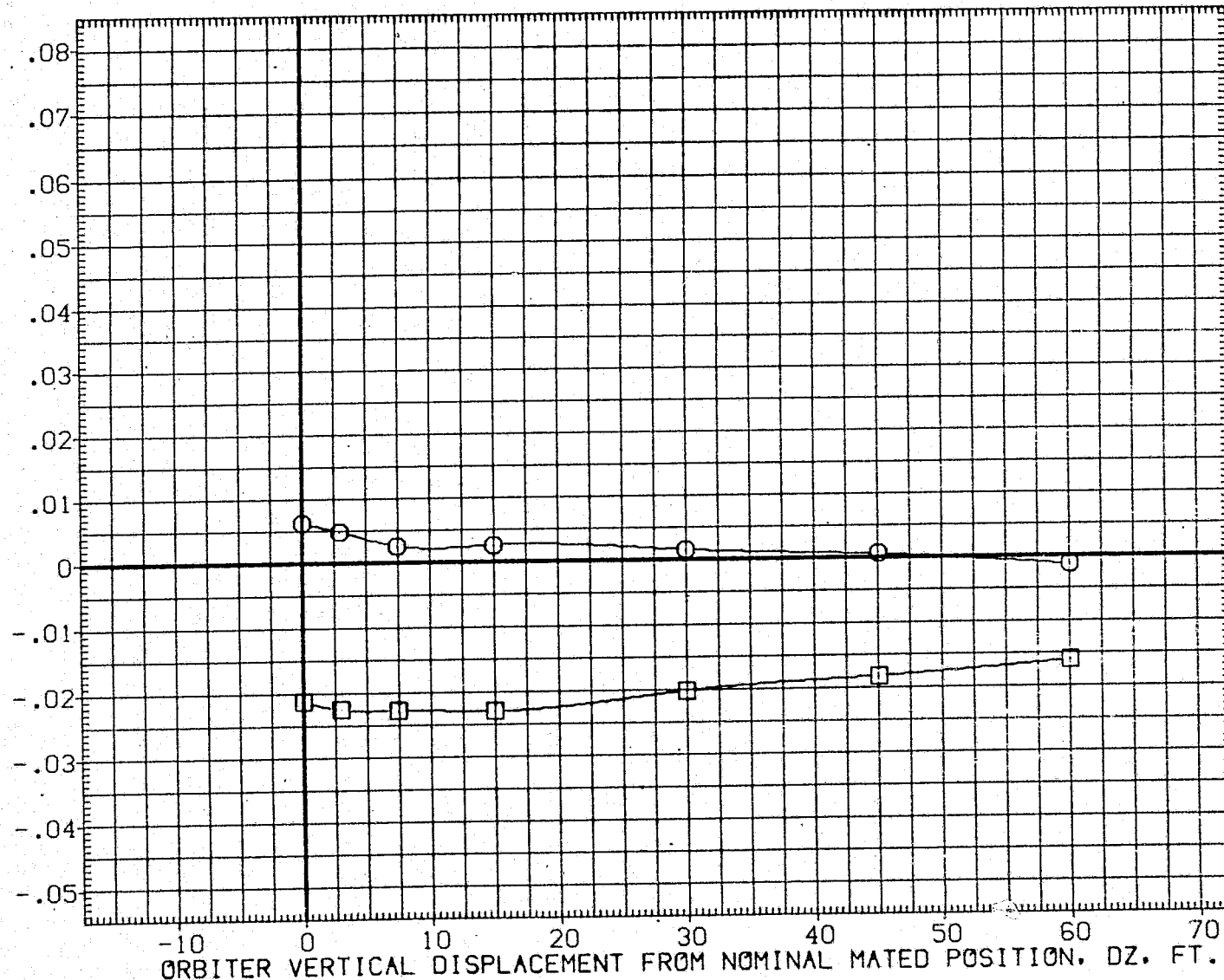


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN064)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 PHI .000
		DY .000 BETAC -5.000
		DX 20.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

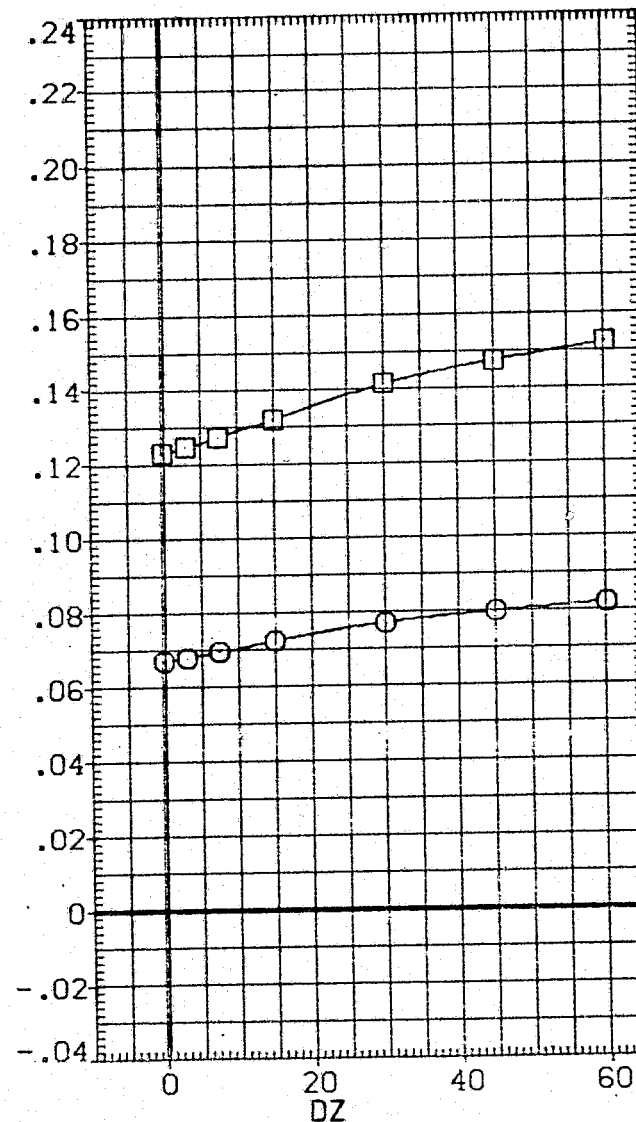
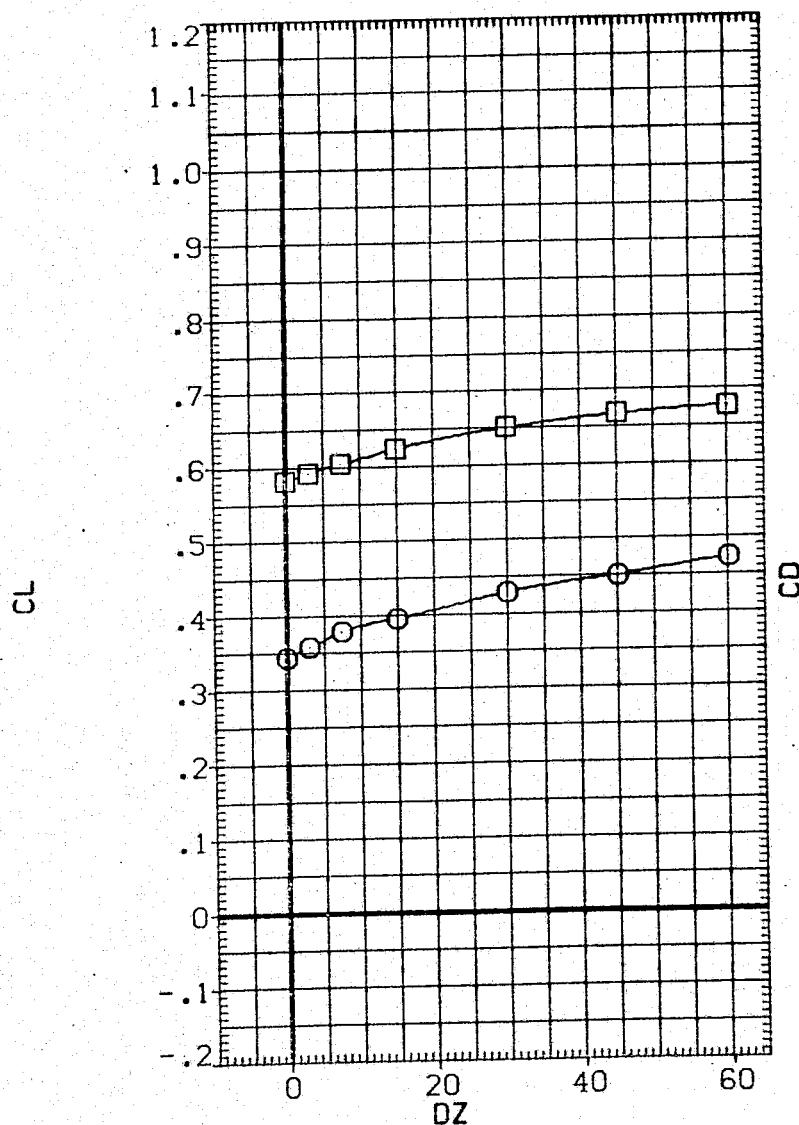


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN064)

SYMBOL



ALPHA0

10.000

ELV-IB

PARAMETRIC VALUES

.000

ELV-OB

3.000

14.000

ELEVON

5.000

MACH

.600

BETA0

.000

PHI

.000

DY

.000

BETAC

-5.000

DX

20.000

ALPHAC

4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

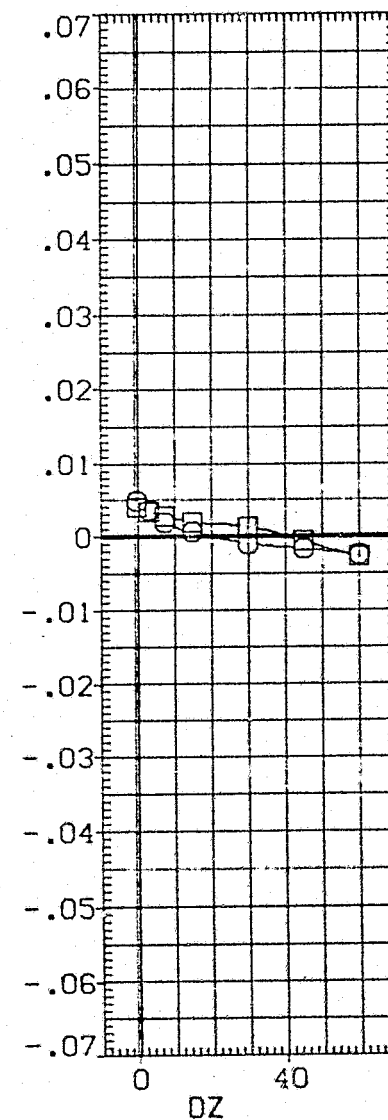
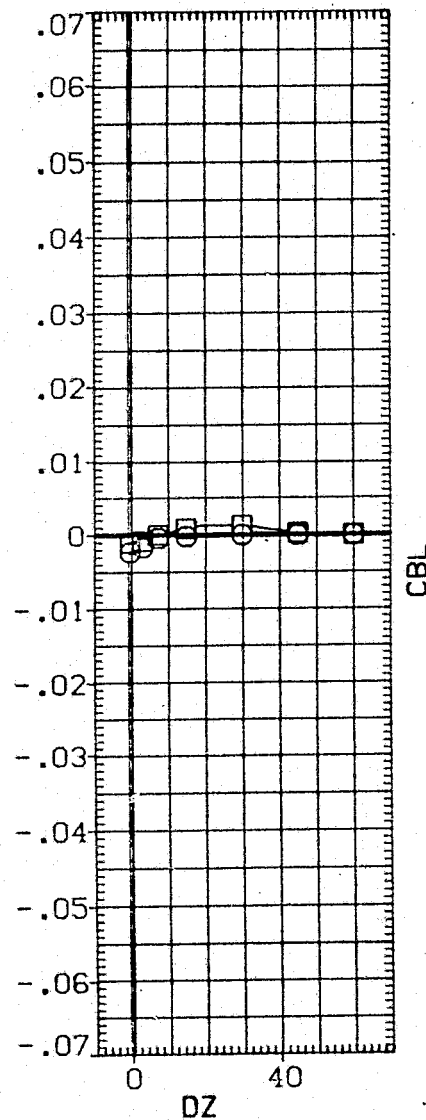
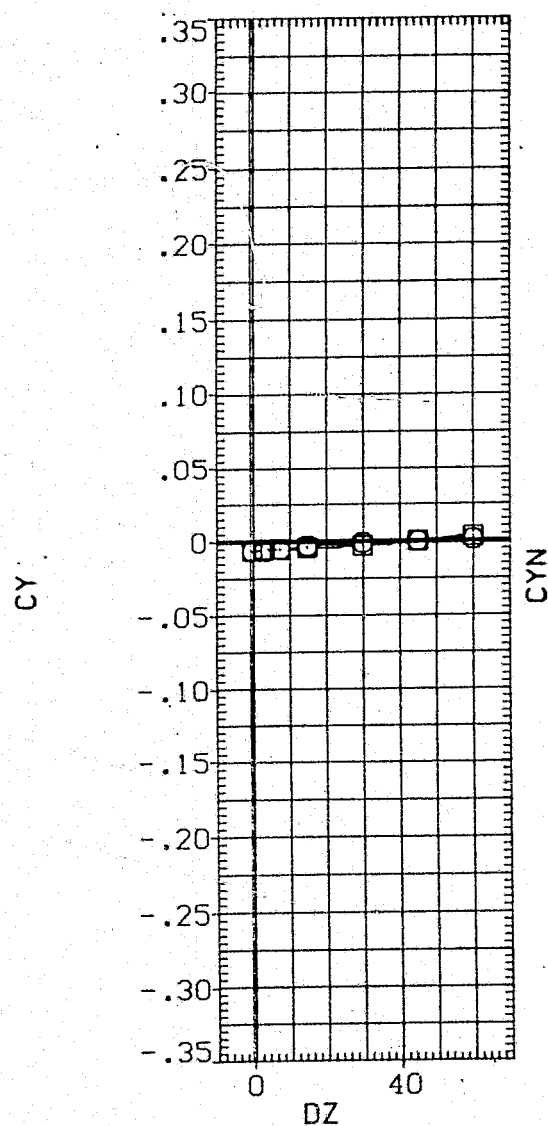


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

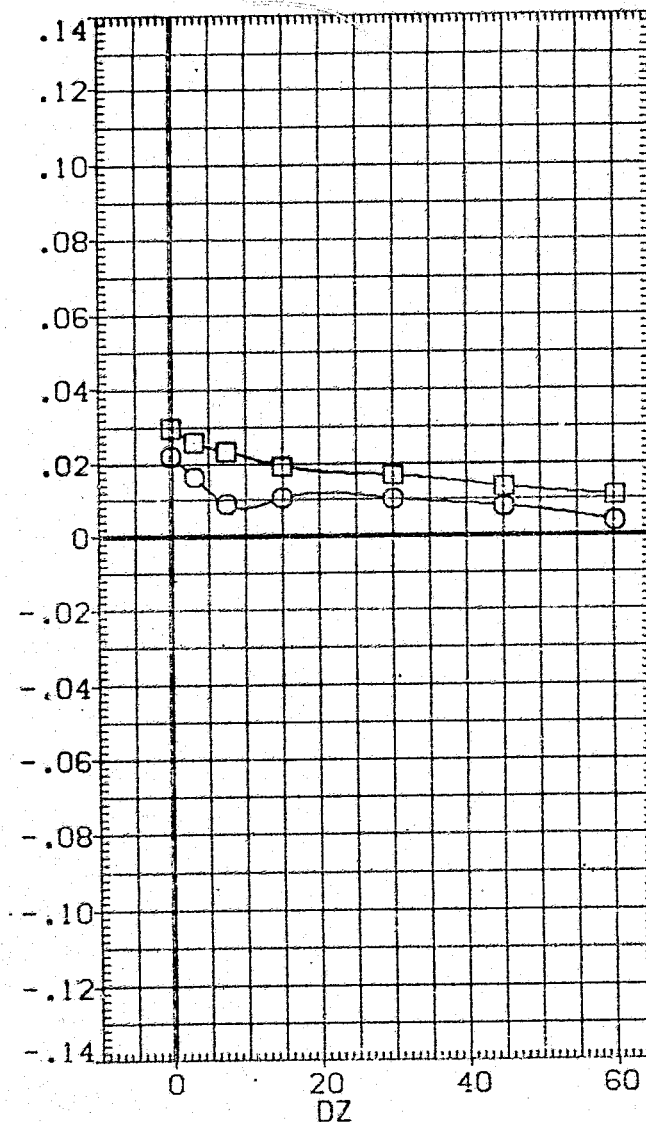
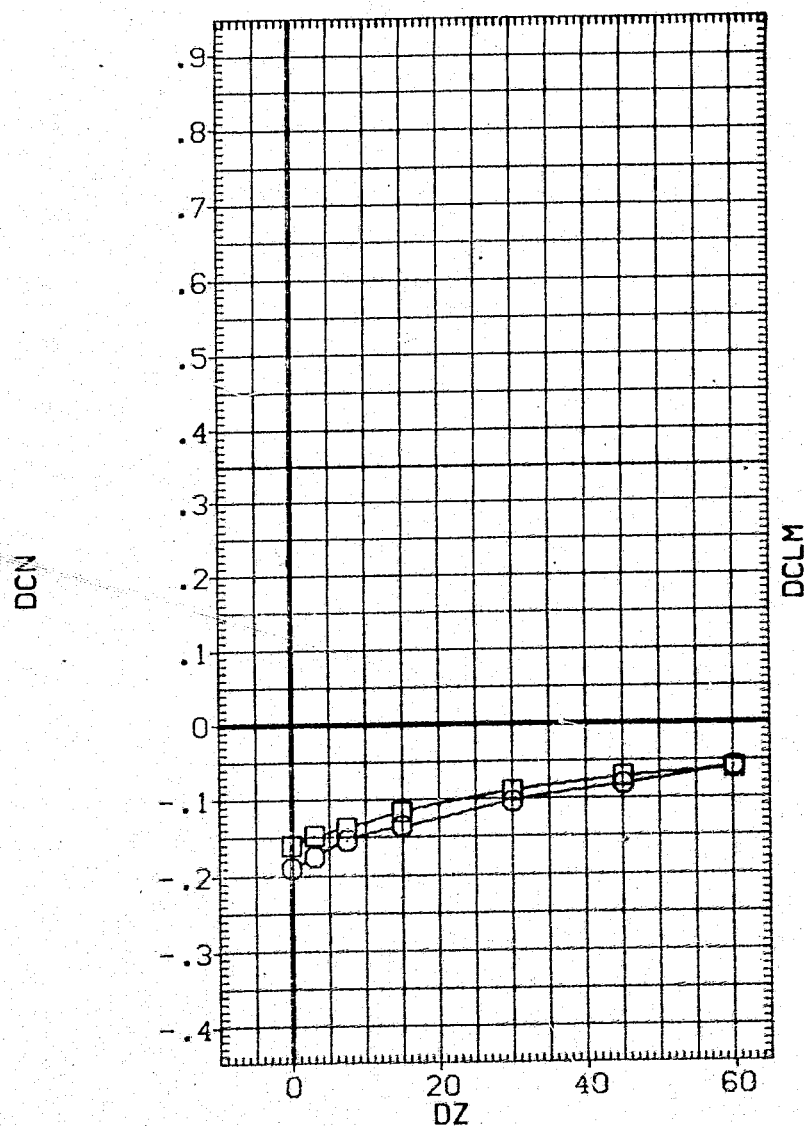


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (064 - 010)(VGN064)

SYMBOL
□ ○

PARAMETRIC VALUES			
ALPHA0	10.000	ALPHAC	4.000
	14.000	ELV-1B	.000
		ELEVON	5.000
		PHI	.000
		DY	.000
		BETAC	-5.000
		ELV-0B	3.000
		MACH	.600
		DX	20.000
		BETA0	.000

REFERENCE INFORMATION	
SREF	2690.0000
LREF	474.8100
BREF	936.6800
XMRP	1109.0000
YMRP	.0000
ZMRP	375.0000
SCALE	.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

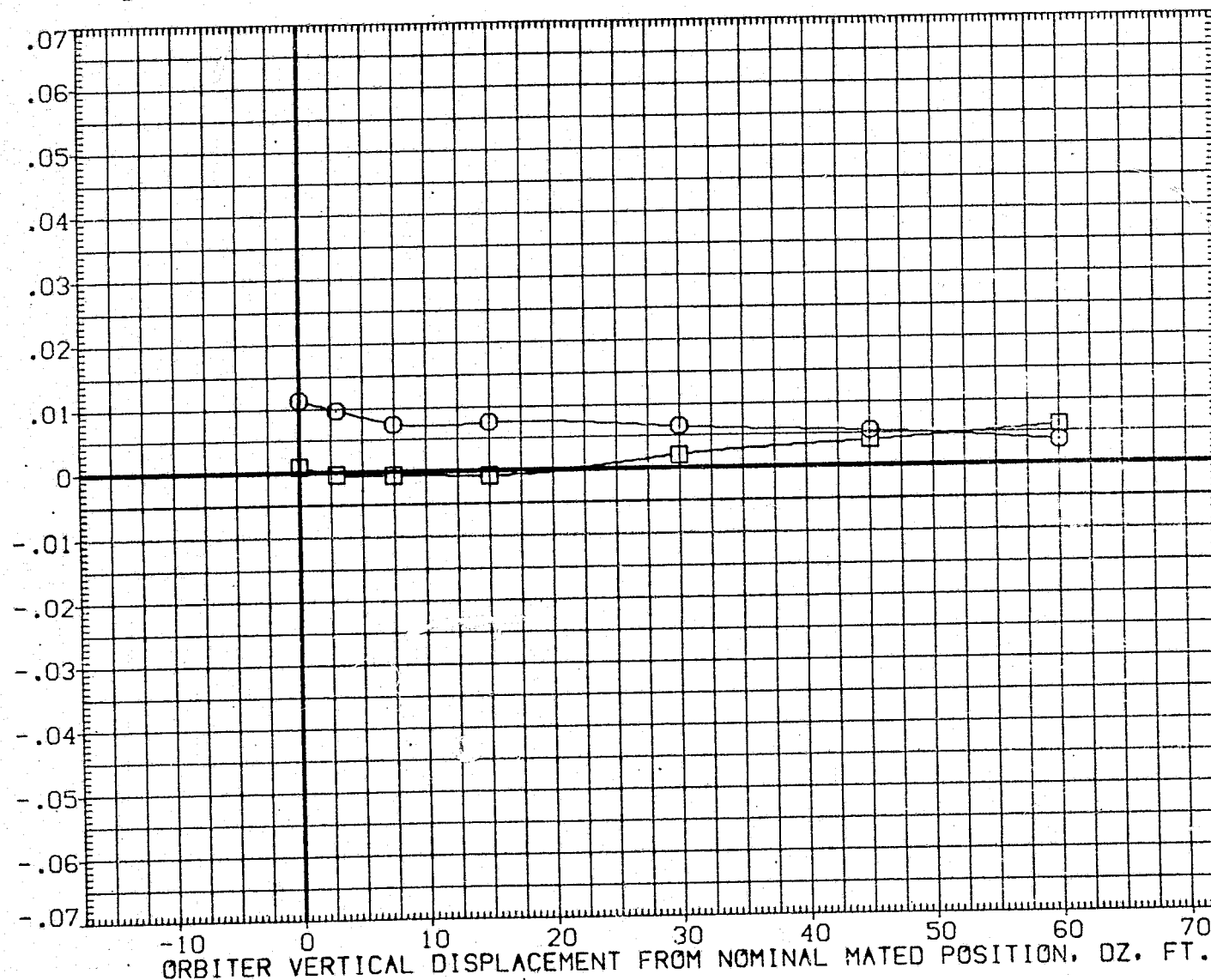


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (064 - 010) (VGN064)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC	
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SD.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

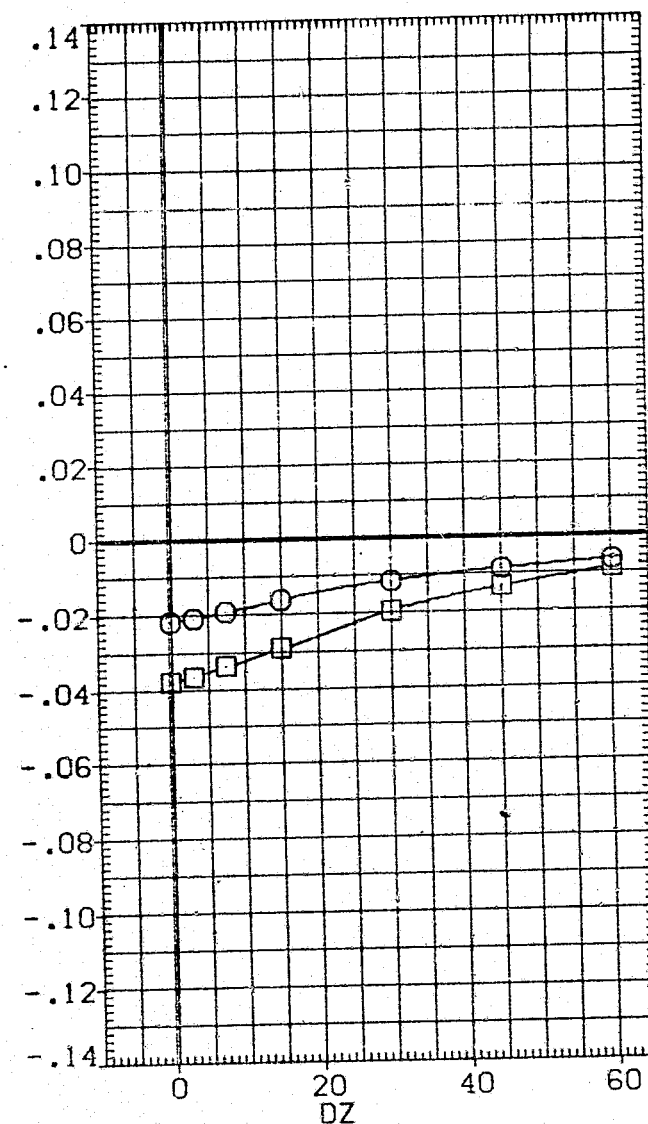
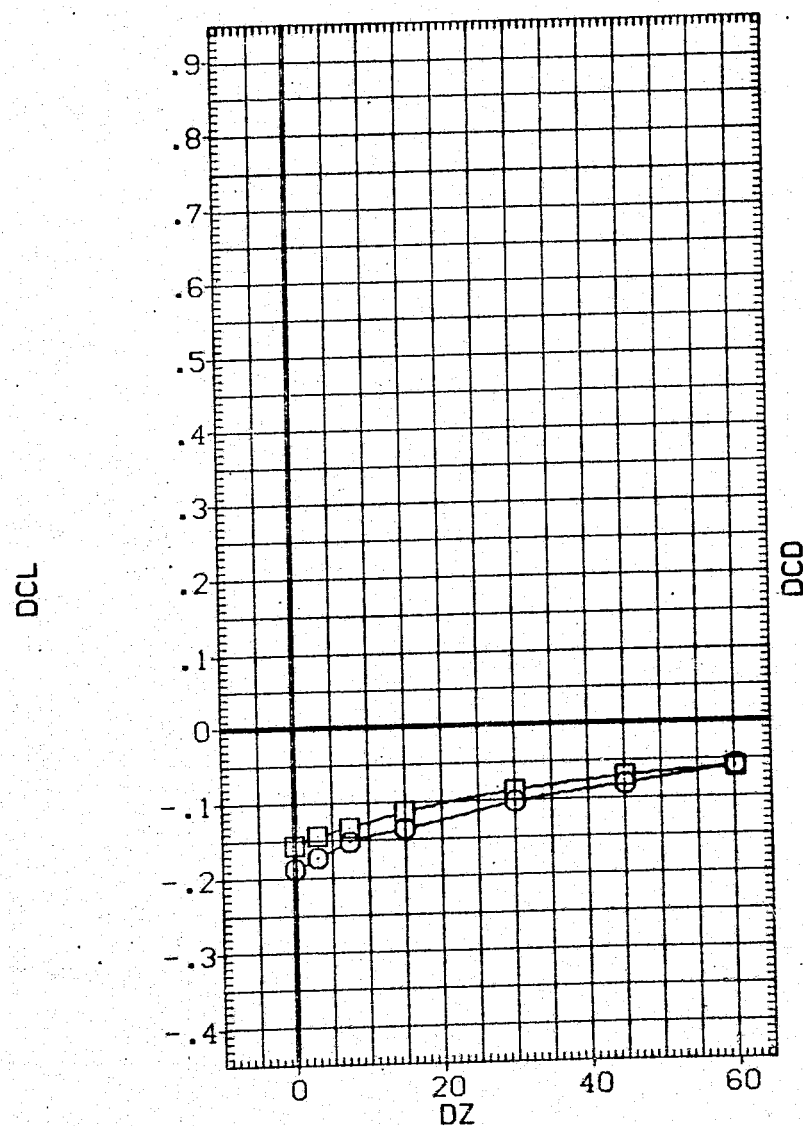


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN067)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 PHI .000
		DY .000 BETAC -5.000
		DX 20.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

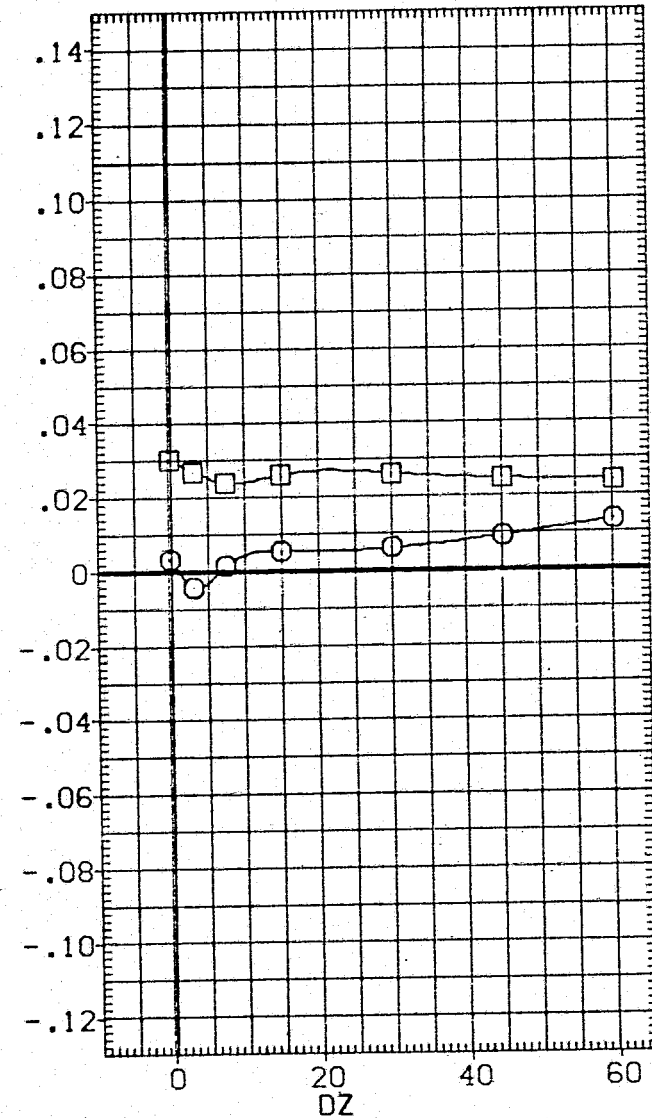
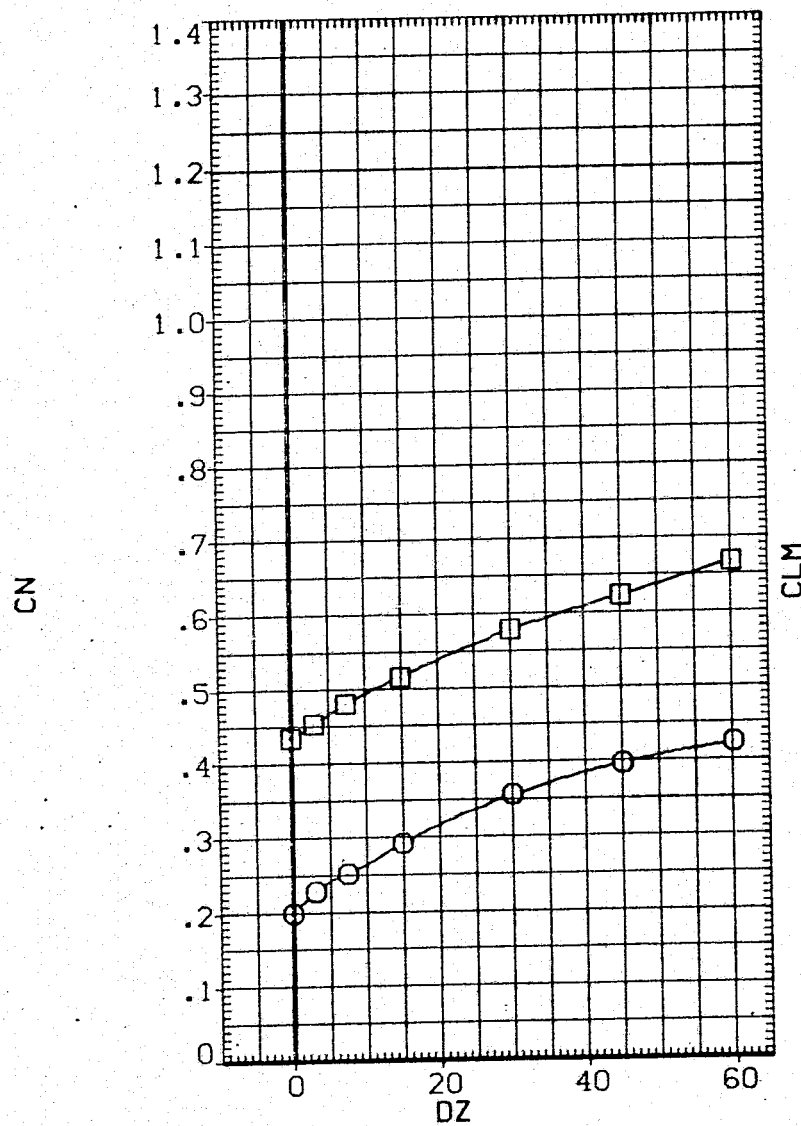


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		OY	.000	BETAC	-5.000
		DX	20.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

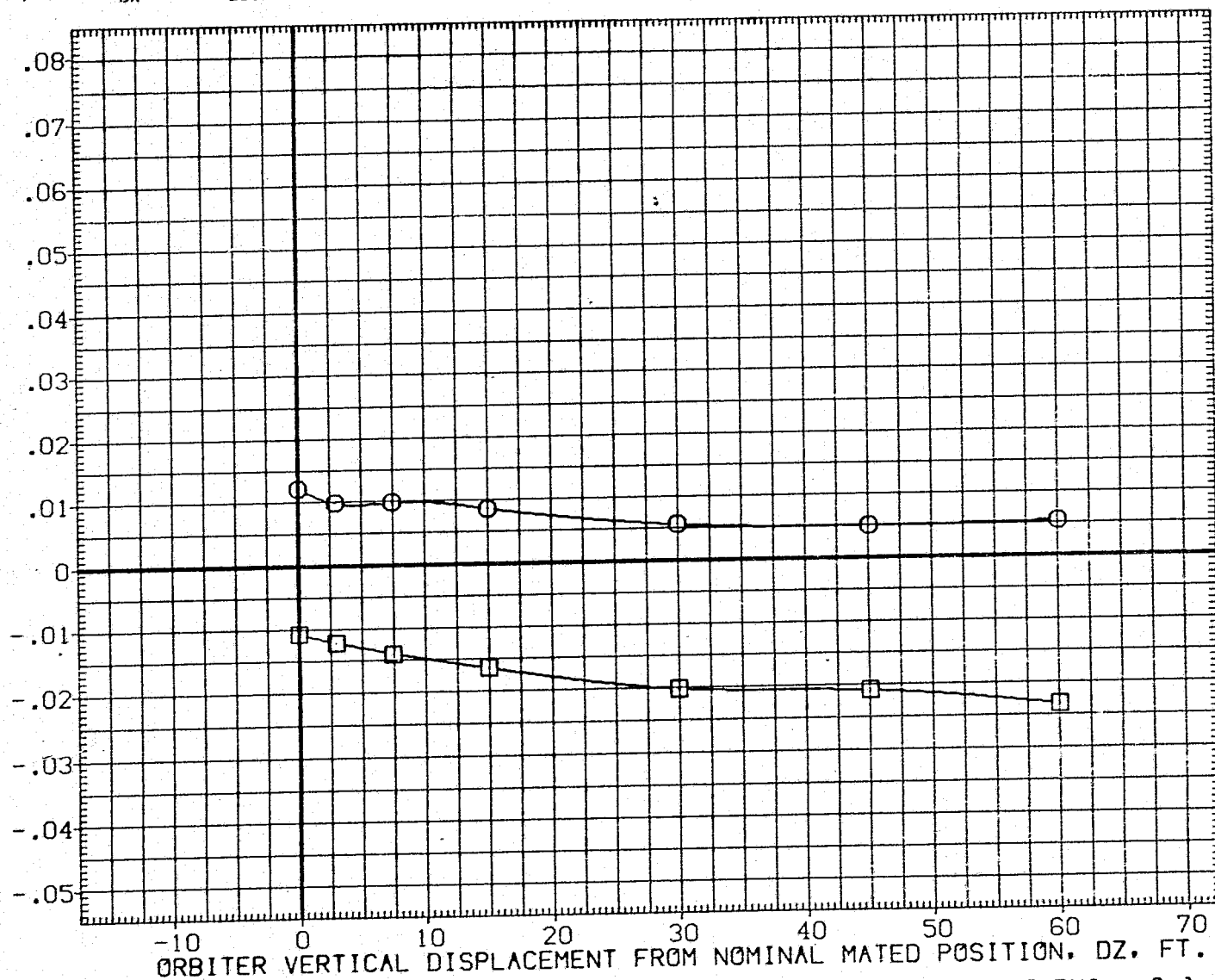


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN067)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	BETAC	-5.000
		DX	20.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
YMRP	1109.0000	IN.X0
ZMRP	375.0000	IN.Y0
SCALE	.0300	IN.Z0

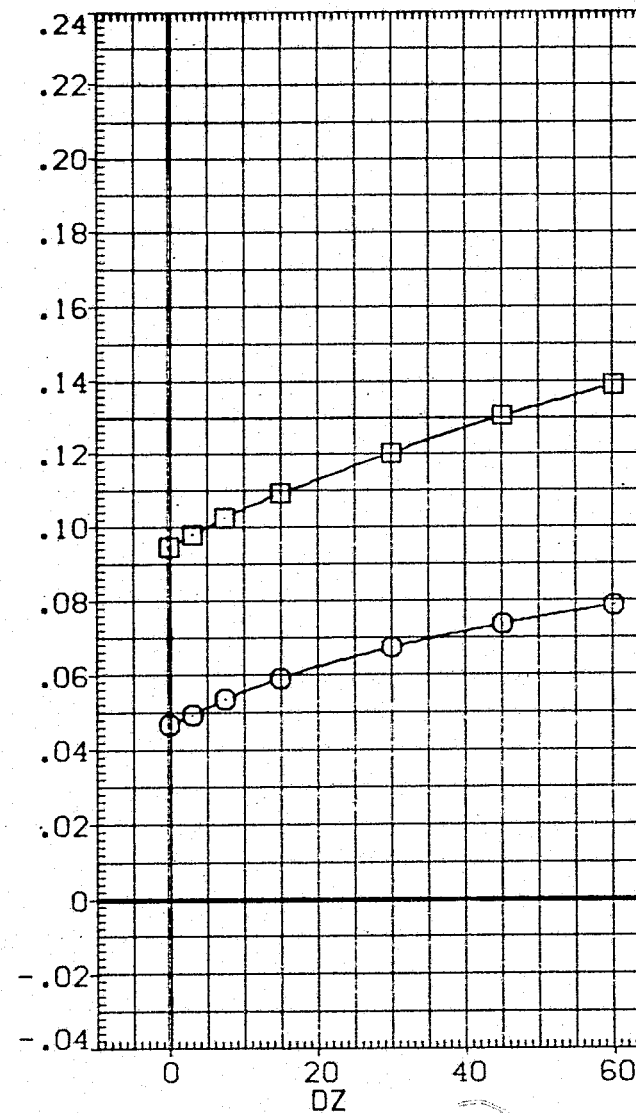
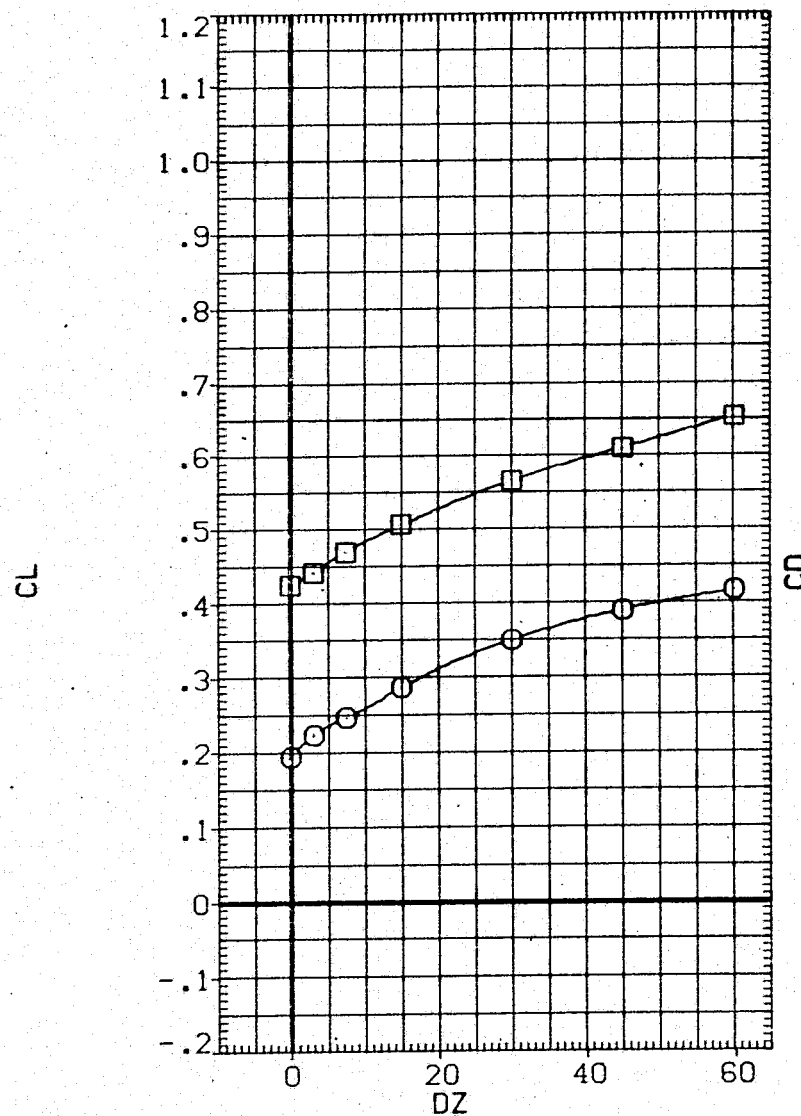


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN067)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	ELEVON	.000	MACH .
□	14.000	BETA0	5.000	PHI .
		DY	.000	BETAC
		DX	20.000	ALPHAC
				3.000
				.600
				.000
				-5.000
				8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

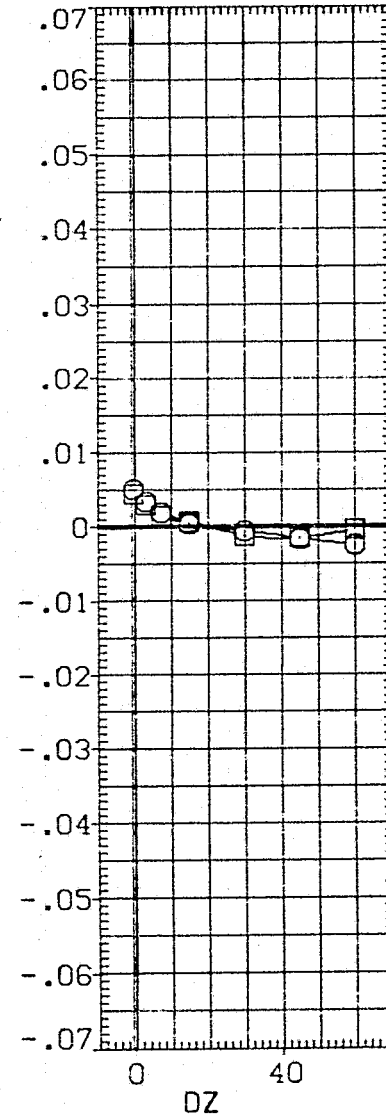
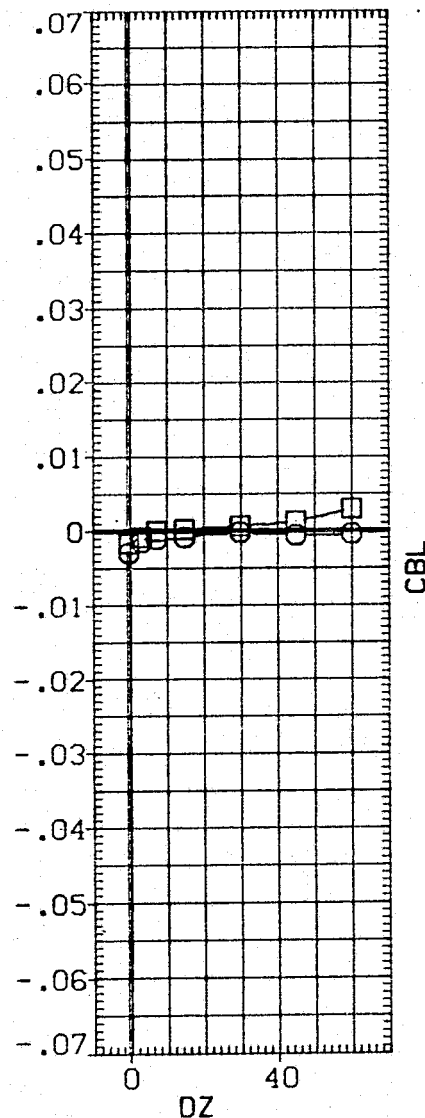
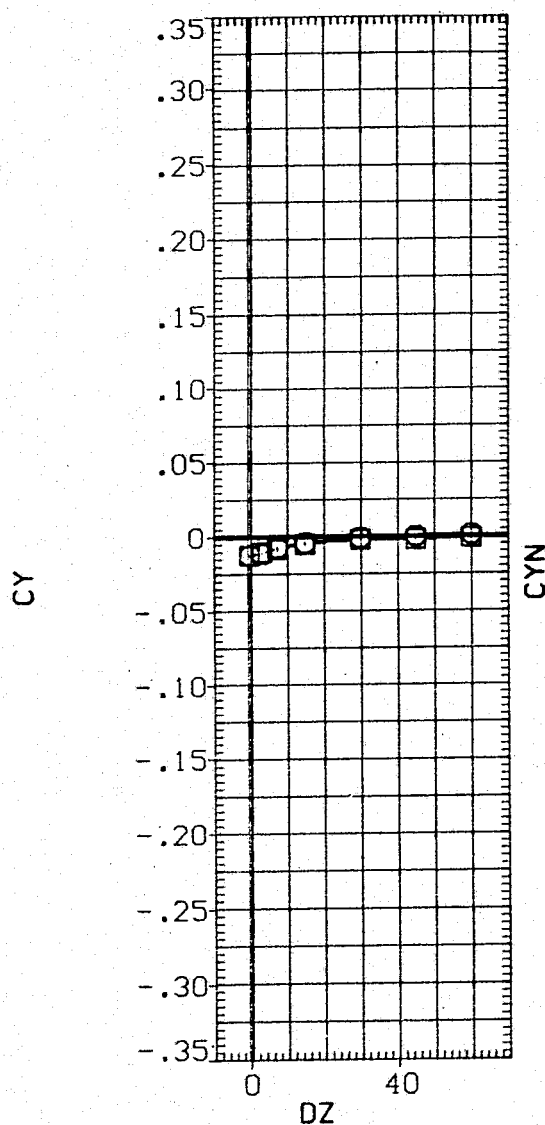


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (067 - 010)(VGN067)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000 BETAC

.000 ELV-0B

5.000 MACH

.000 DX

.000 BETA0

-5.000

3.000

.600

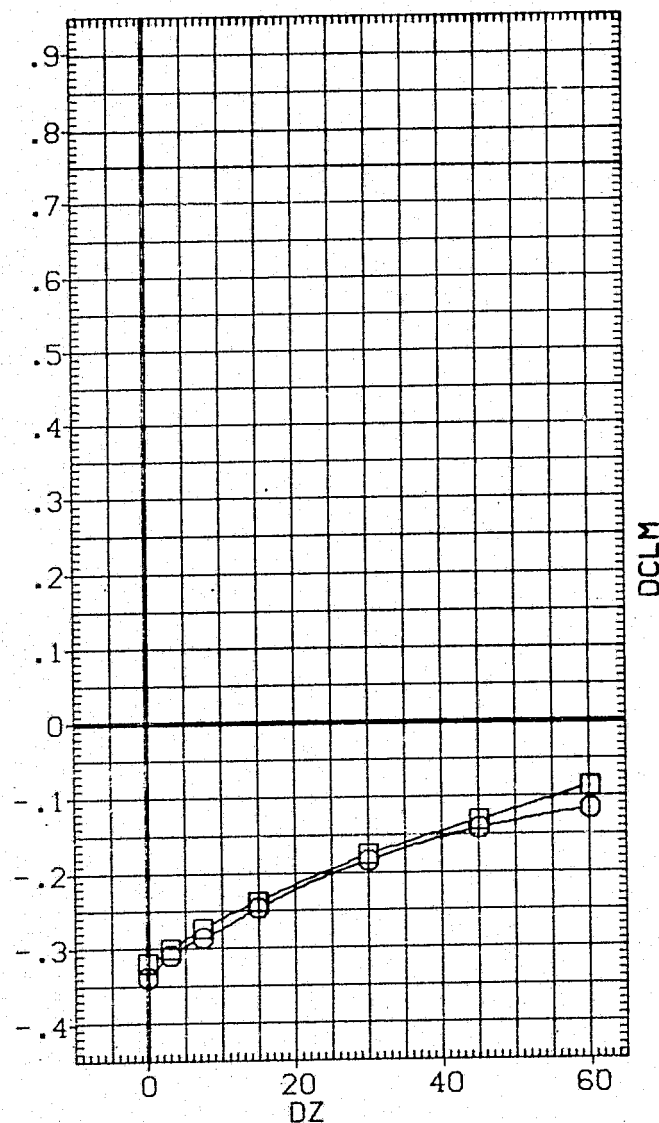
20.000

.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

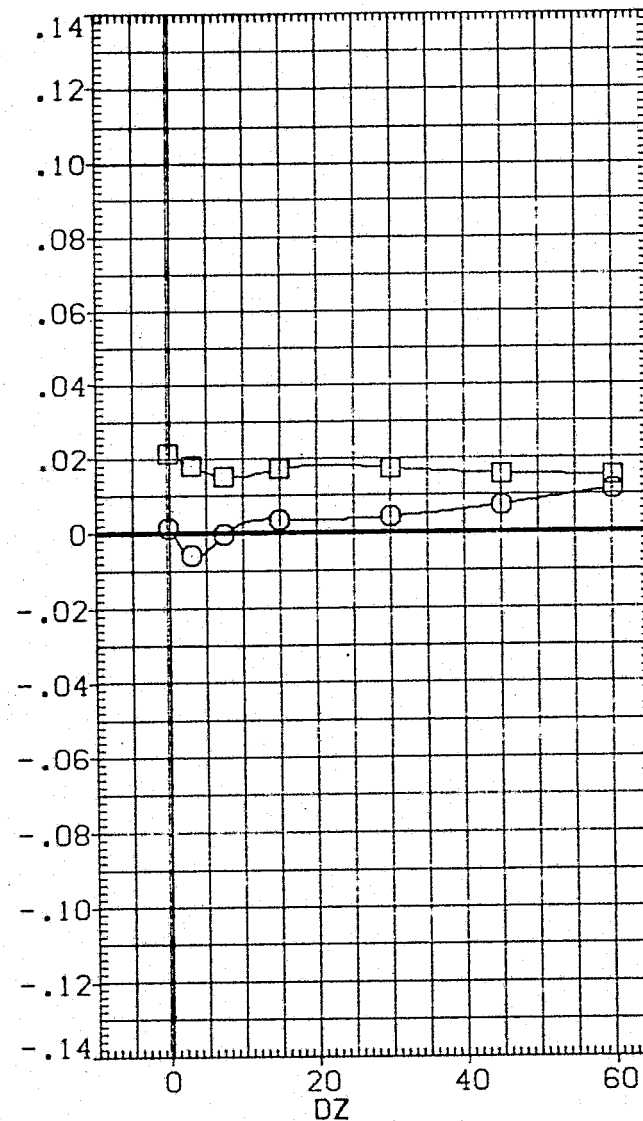


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL
○
□

ALPHA0
10.000
14.000

ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000 BETAC -5.000
.000 ELV-0B 3.000
5.000 MACH .600
.000 DX 20.000
.000 BETA0 .000

REFERENCE INFORMATION

SREF 2690.0000 50.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

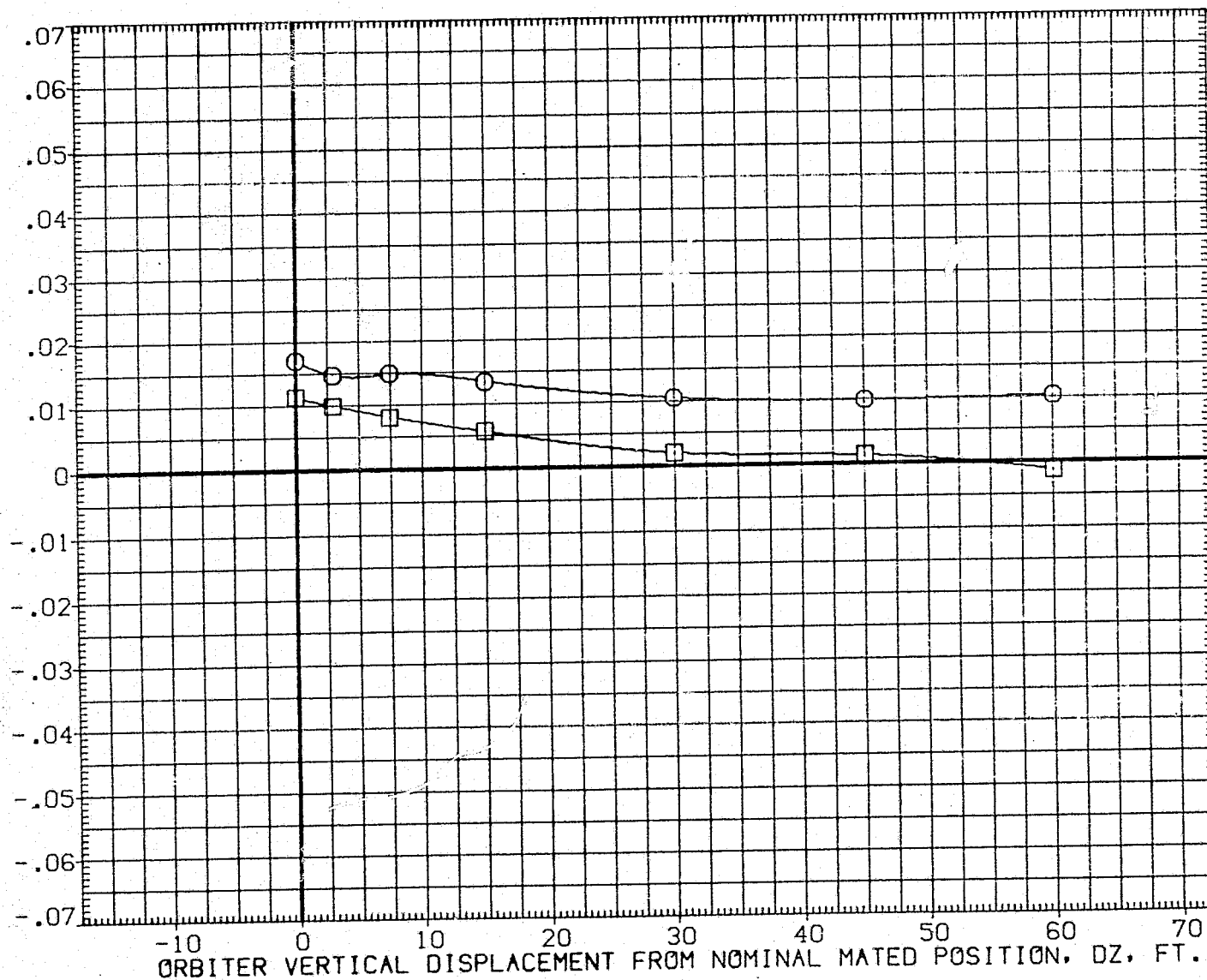


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (067 - 010) (VGN067)

SYMBOL

○

□

ALPHA0

10.000

14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

.000

BETAC

ELV-08

MACH

DX

BETA0

-5.000

3.000

.600

20.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

ZMRP .0000

SCALE .0300

SQ.FT.

IN.

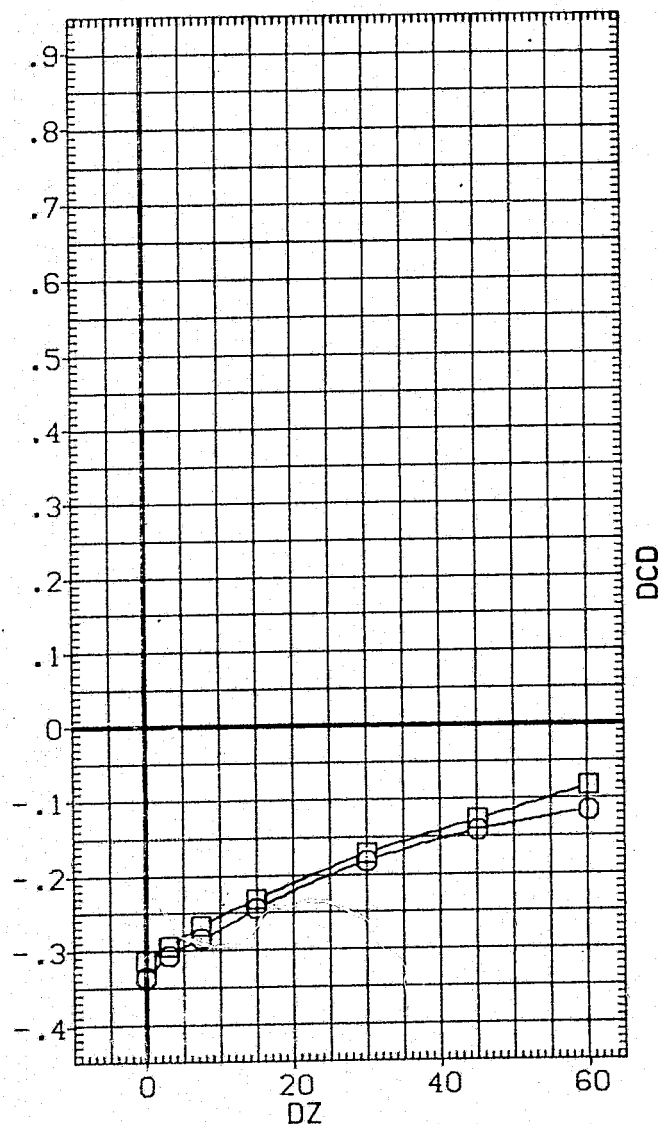
IN.

IN.X0

IN.Y0

IN.Z0

DCL



DCD

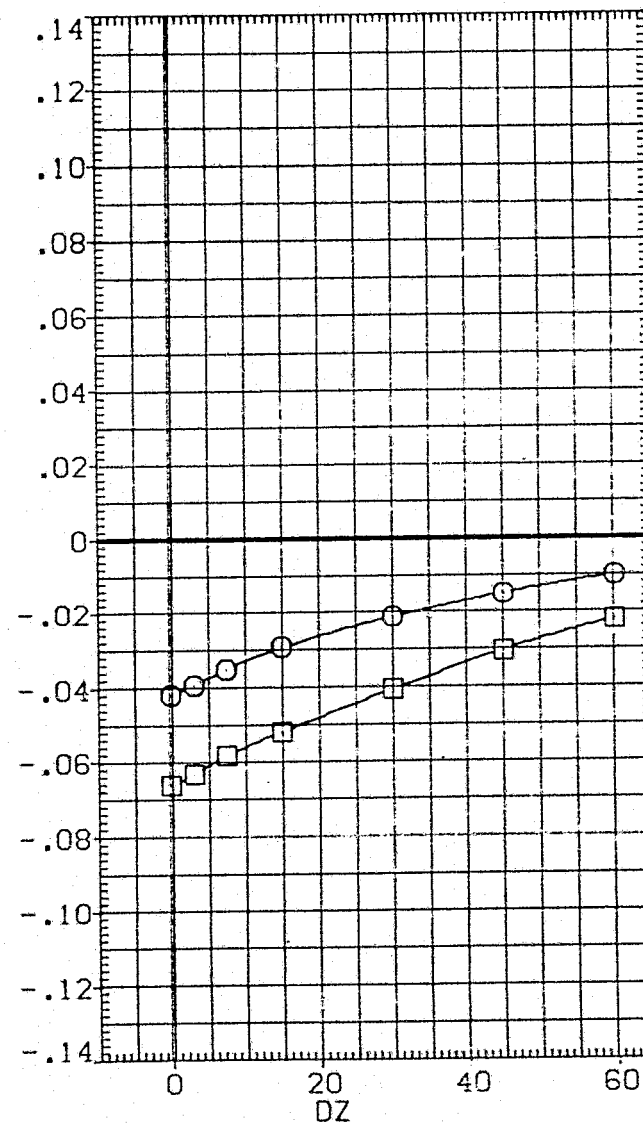


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN068)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

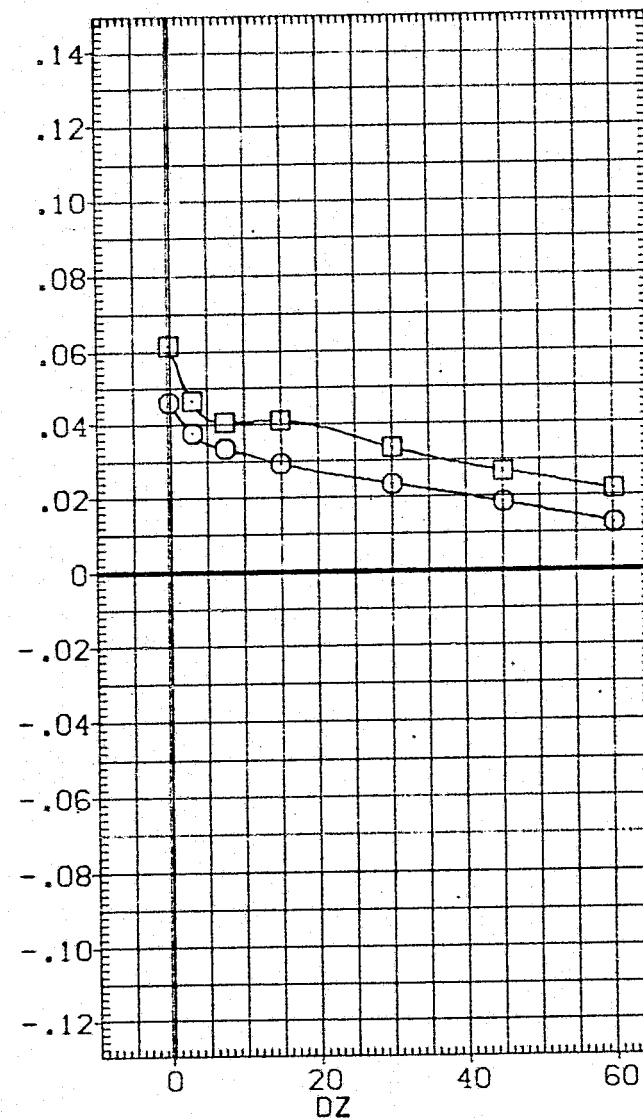
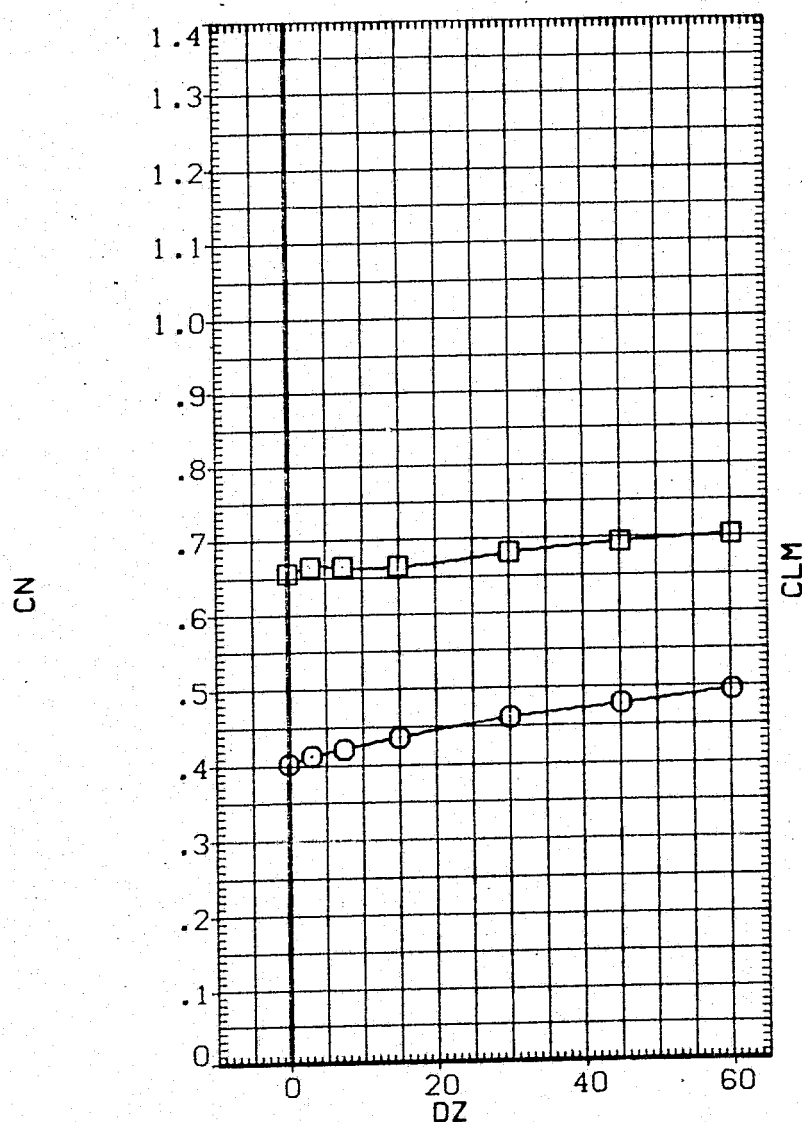


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN068)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

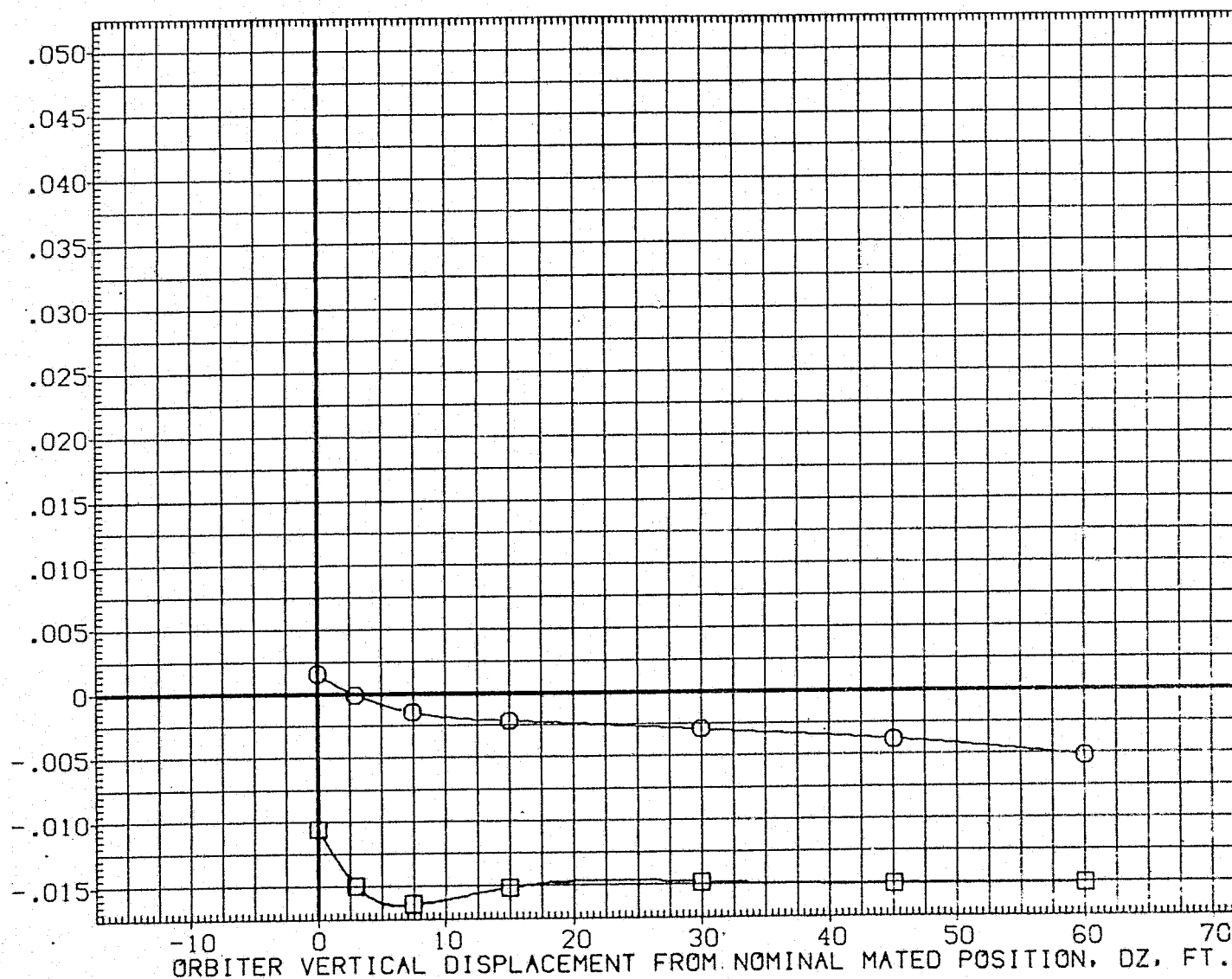


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN068)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

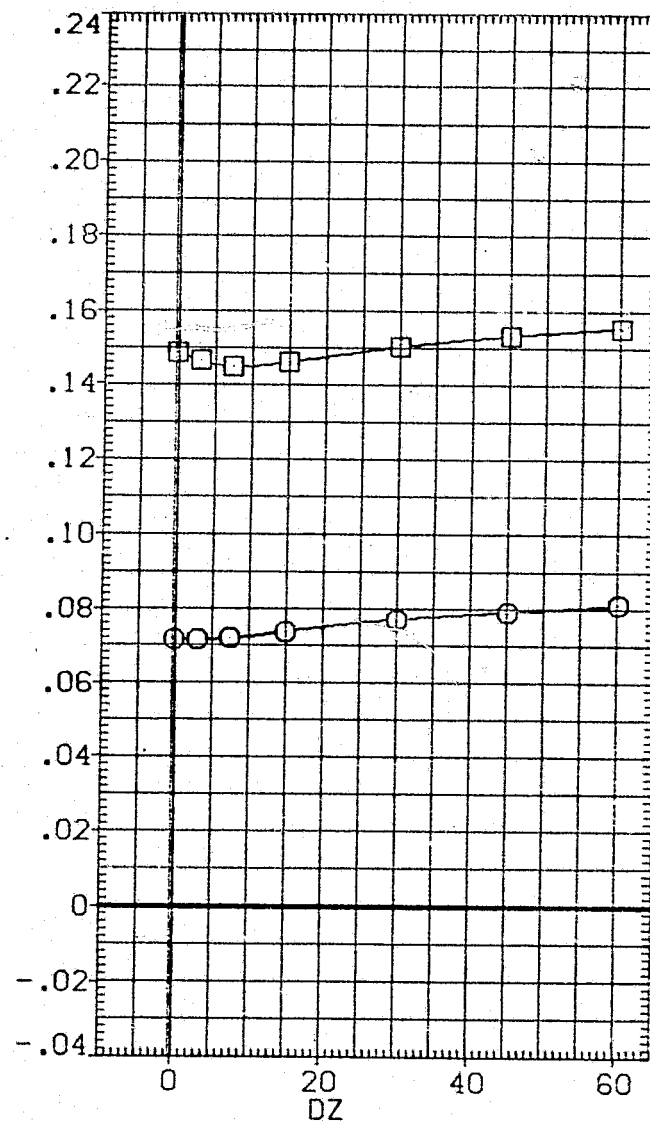
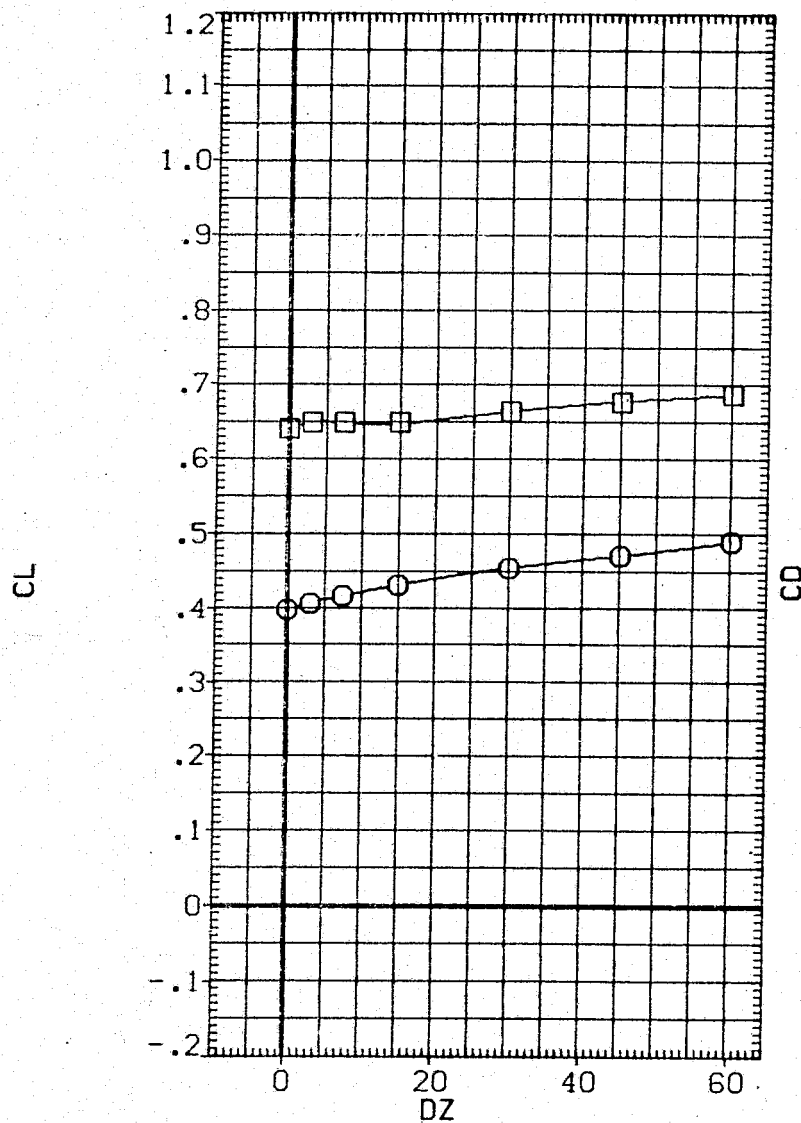


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN068)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	ELEVON	.000	MACH
□	14.000	BETA0	5.000	BETAC
		PHI	.000	DY
		DX	.000	ALPHAC
				3.000
				.600
				-5.000
				10.000
				4.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

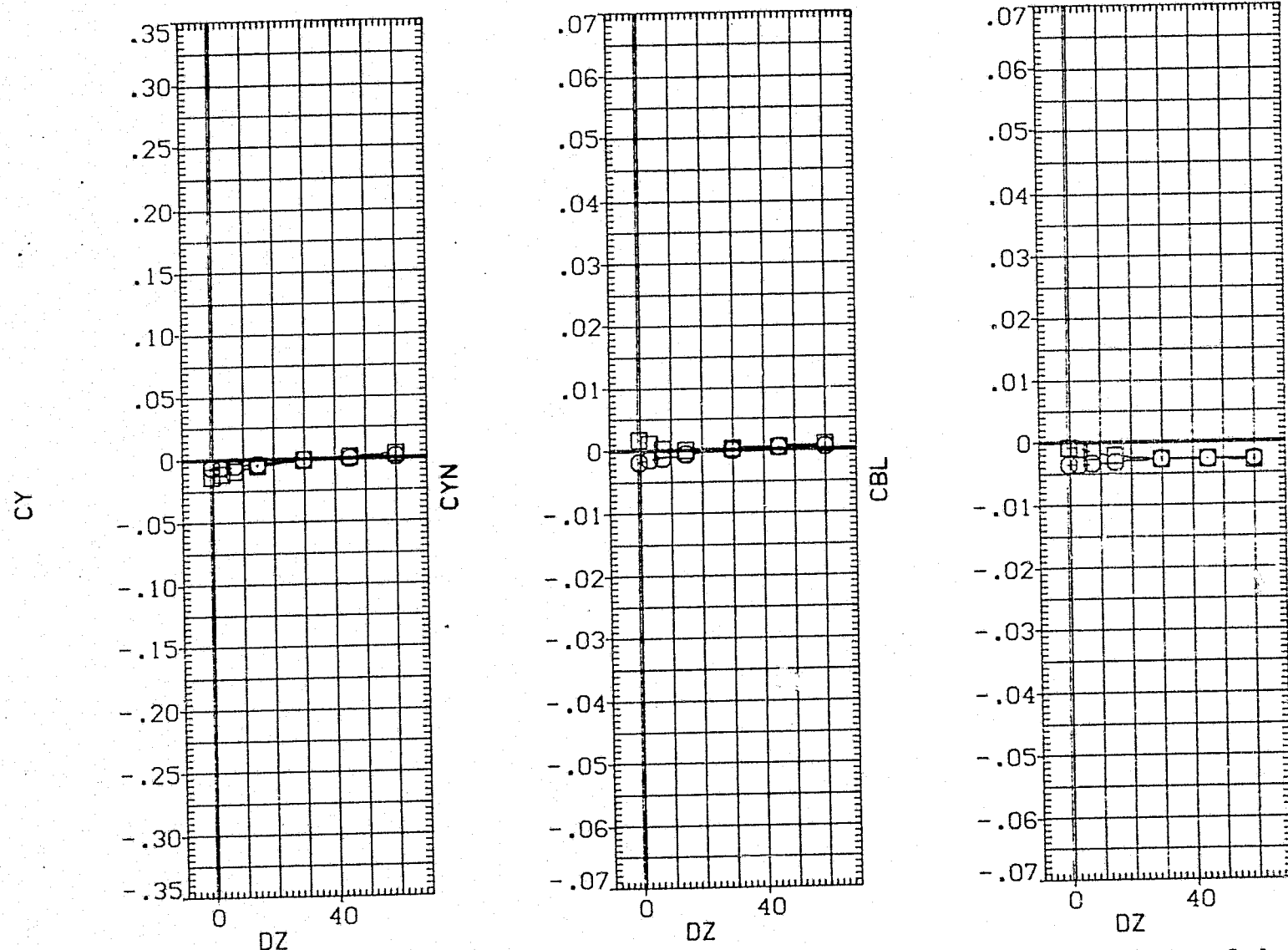
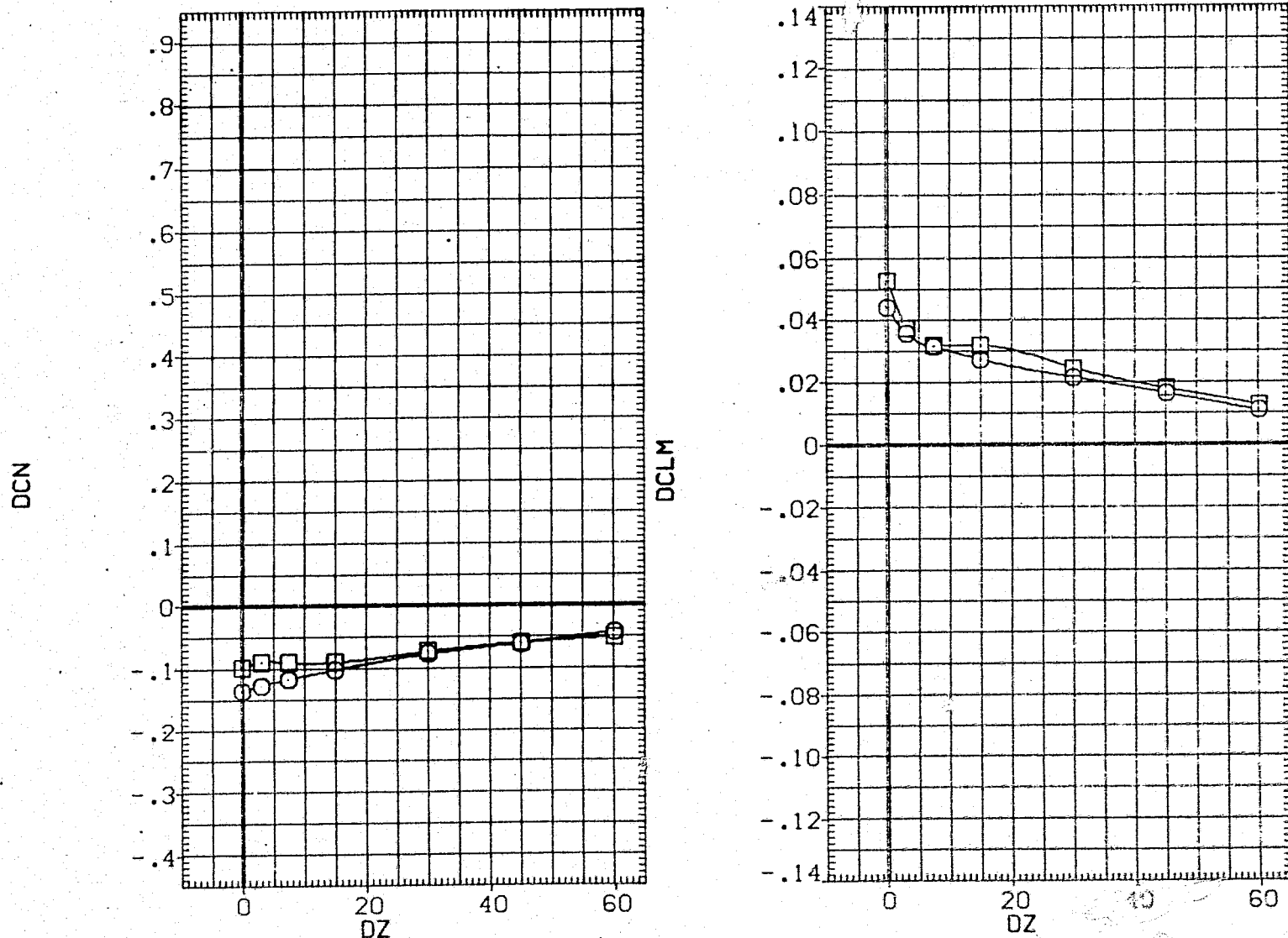


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT $\Phi = 0$)

CA20 (747/1 01 S1) - (01 S1) · D/S (068 - 010)(VGN068)

SYMBOL
○
□

ALPHA0
10.000
14.000

ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000 BETAC -5.000
.000 ELV-0B 3.000
5.000 MACH .600
.000 DX .000
10.000 BETA0 .000

REFERENCE INFORMATION

SREF 2690.0000 50.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

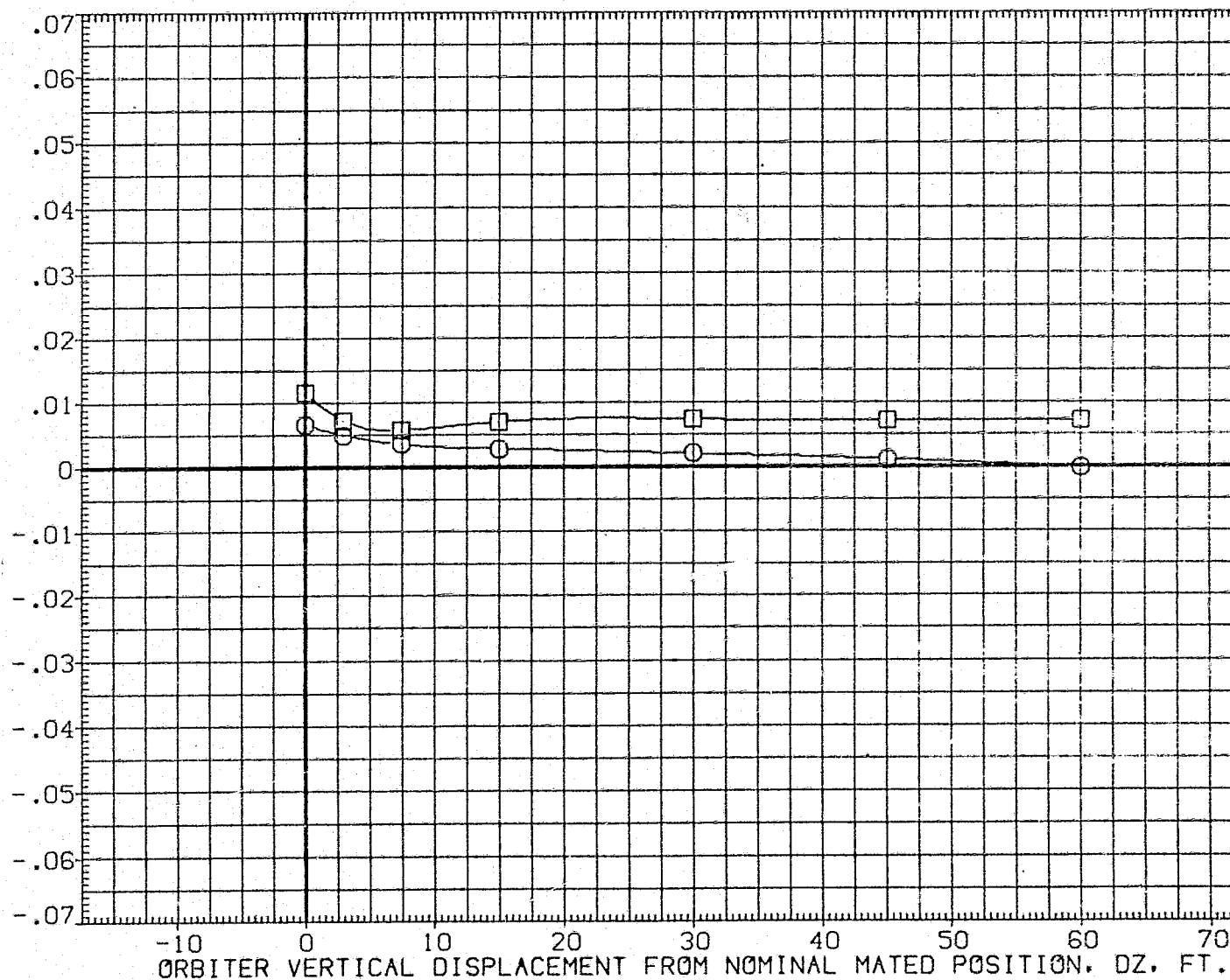


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.9100	IN.
BREF	936.6800	IN.
YMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

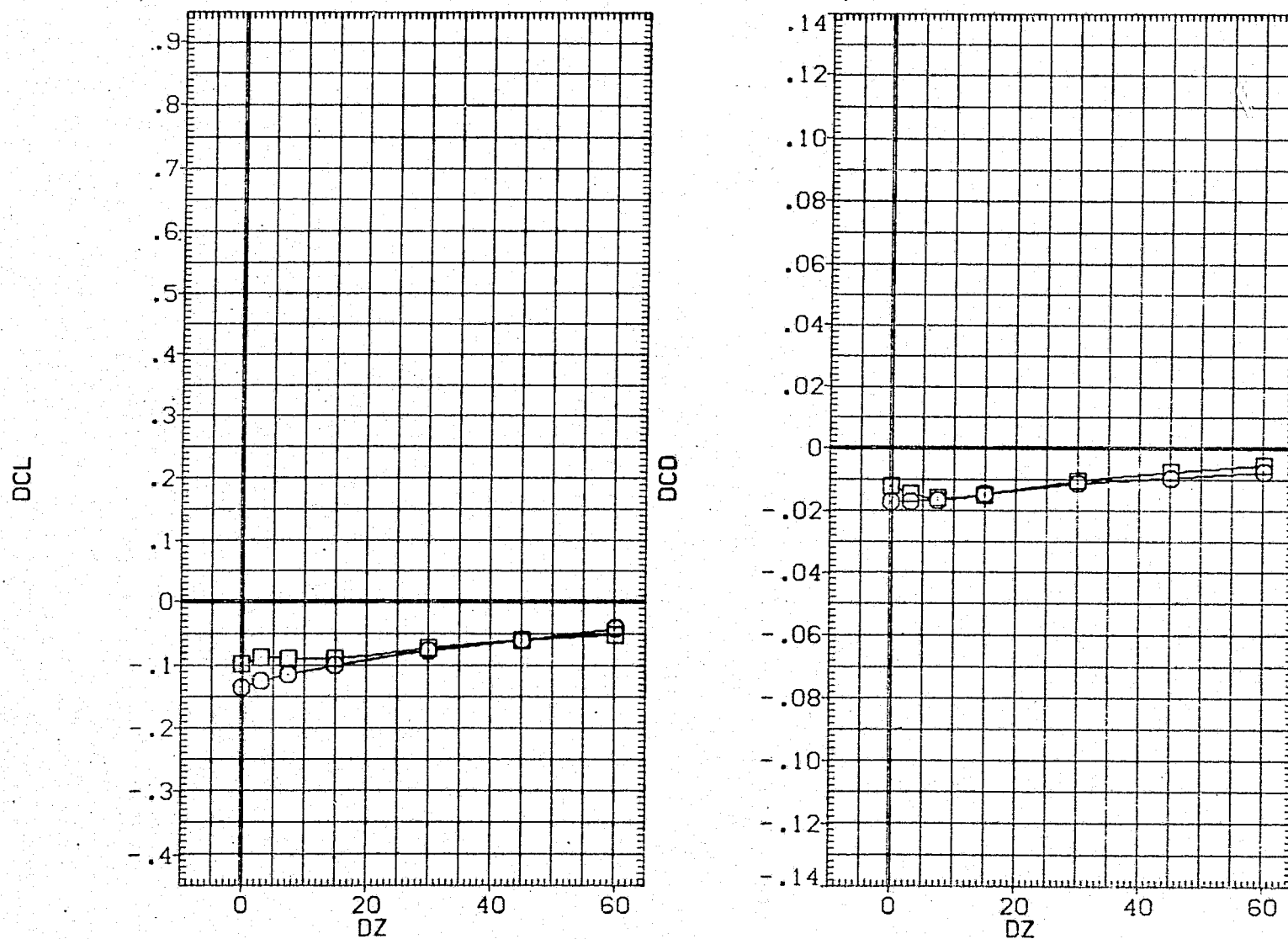


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN070)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	3.000
○	10.000	ELEVON	.000	MACH	.600
□	14.000	BETA0	5.000	BETAC	-5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

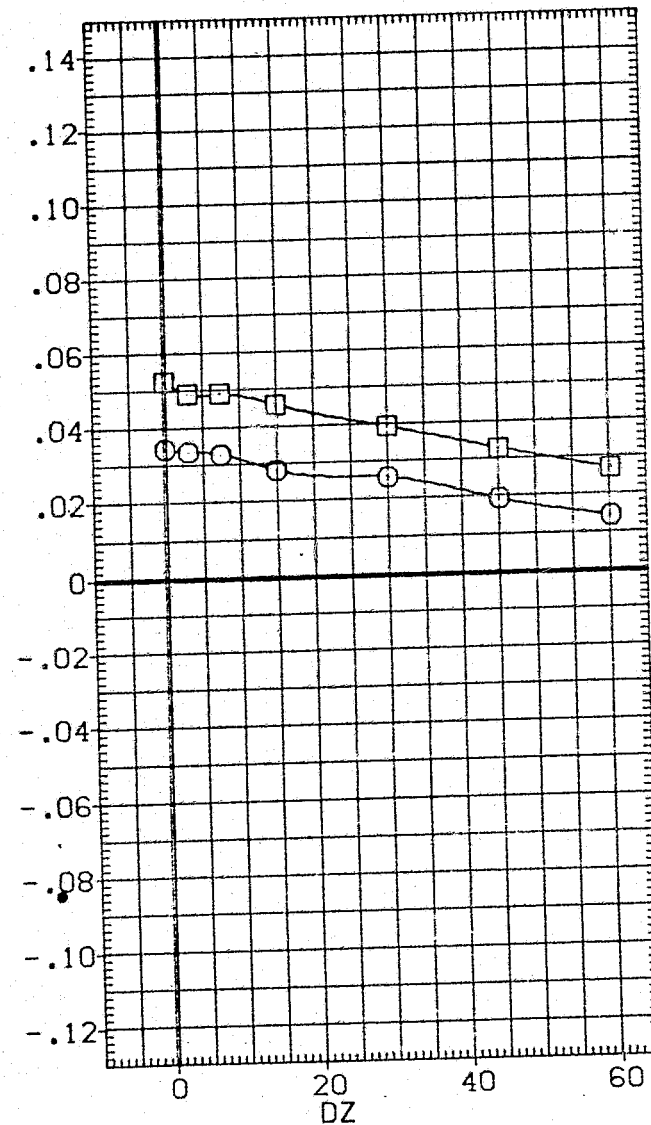
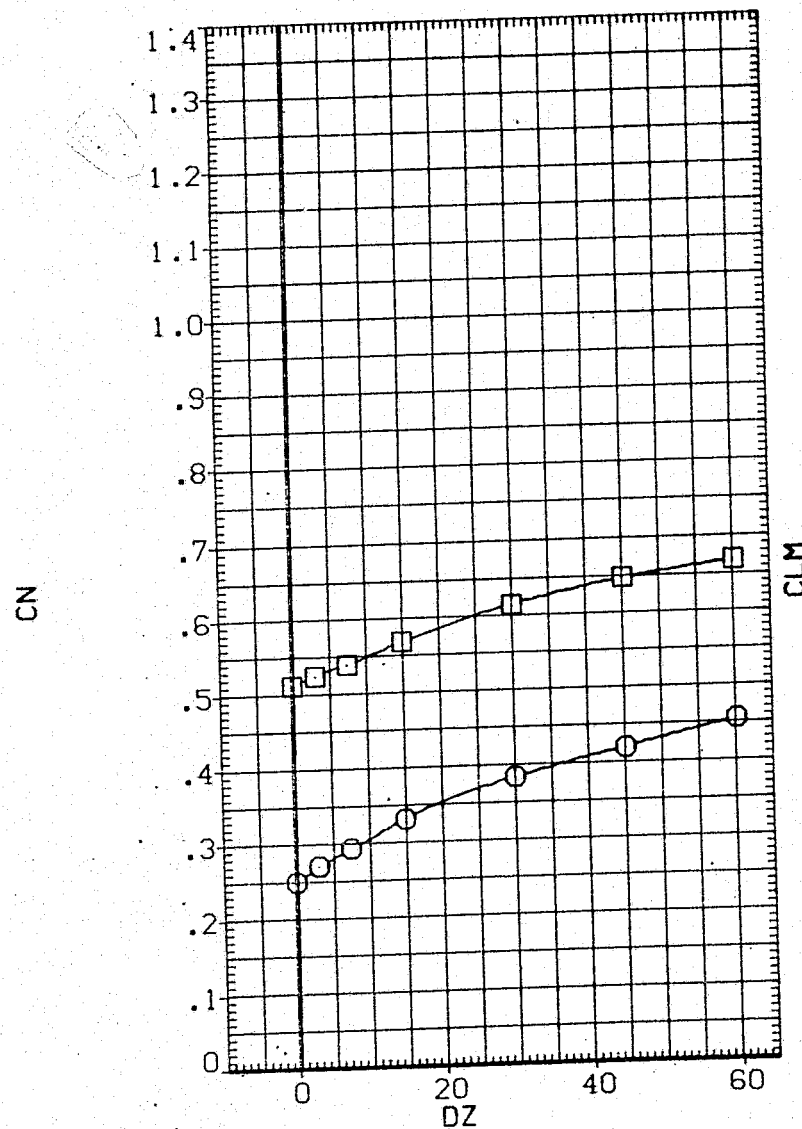


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI .000 DY 10.000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

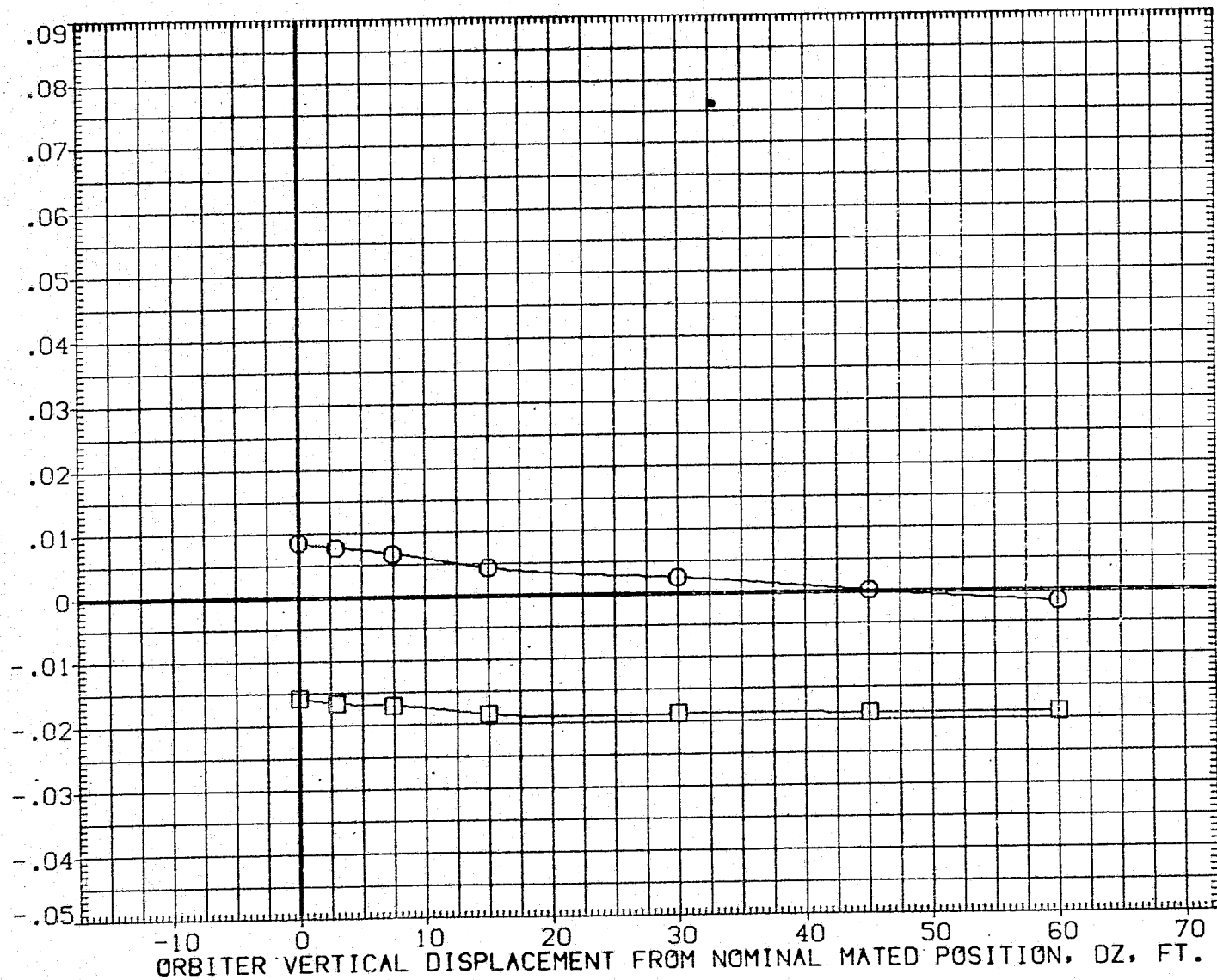


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN070)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
	BETA0 .000	BETAC -5.000
	PHI .000	DY 10.000
	DX .000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

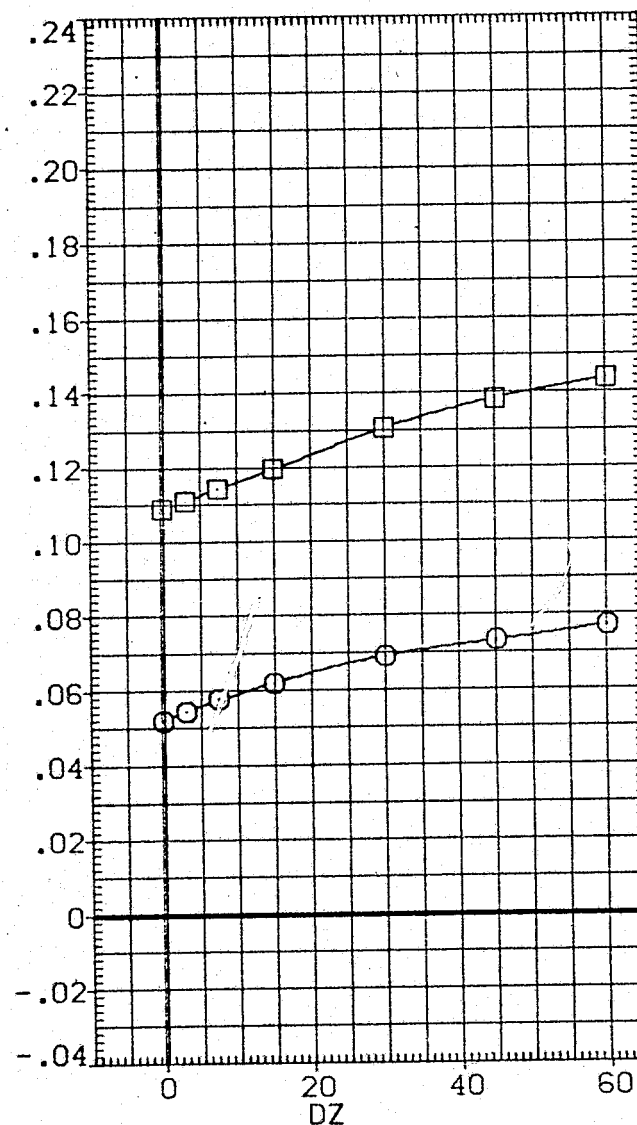
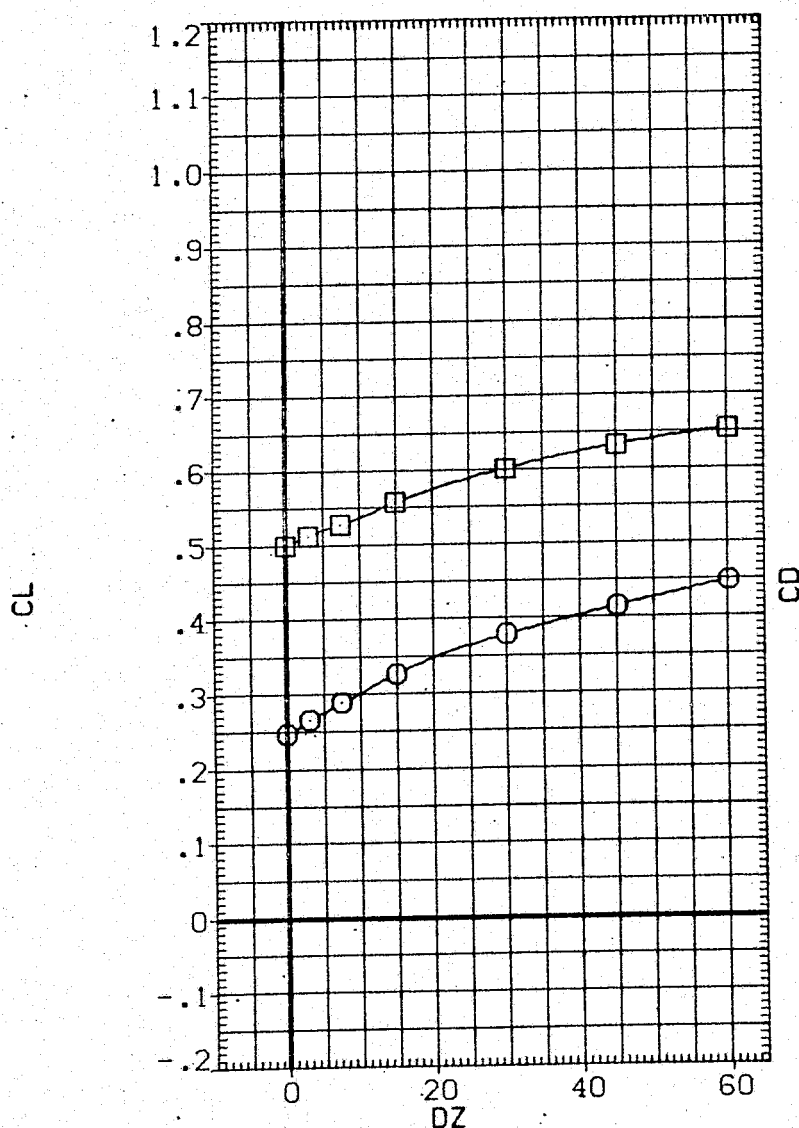


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN070)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000	.000	MACH	3.000	
□	14.000	5.000	BETAC	.600	
		.000	DY	-5.000	
		.000	ALPHAC	10.000	
		.000		8.000	

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

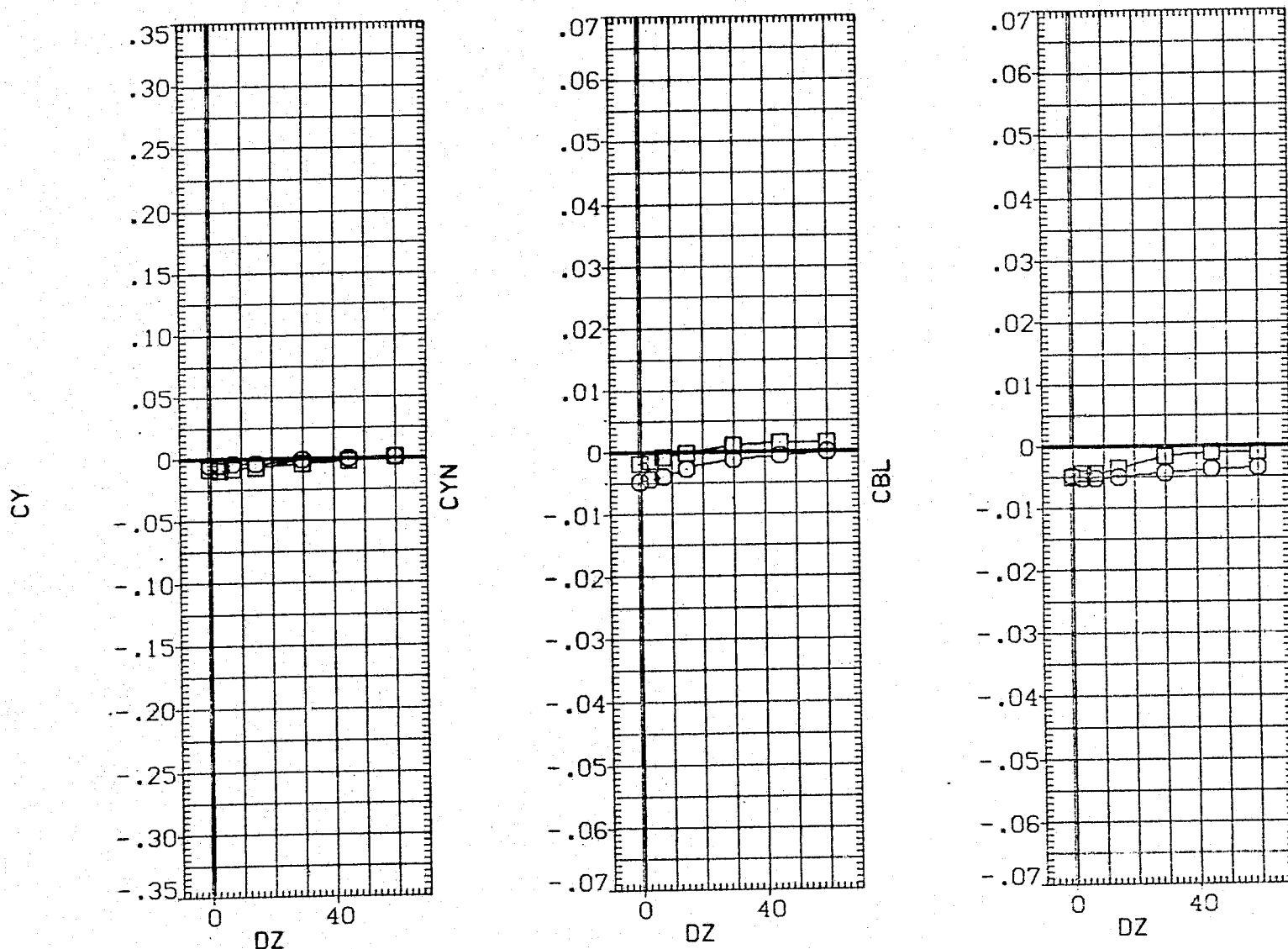


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (070 - 010)(VGN070)

SYMBOL

○

□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

10.000

BETAC

ELV-OB

MACH

DX

BETA0

-5.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000 50.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

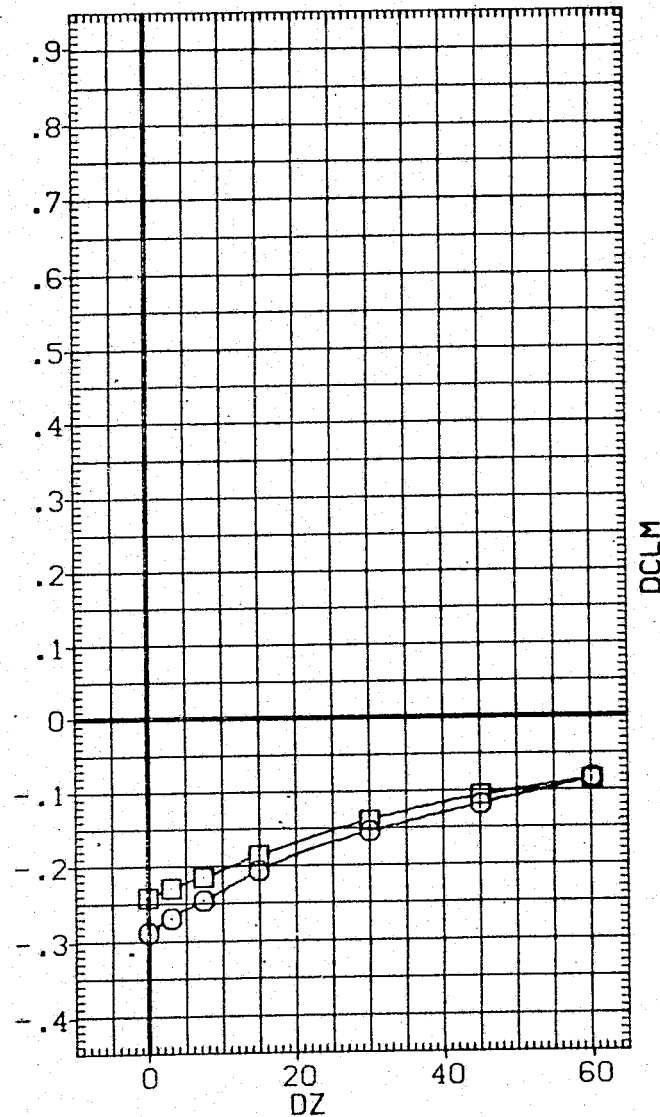
XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

DCN



DCLM

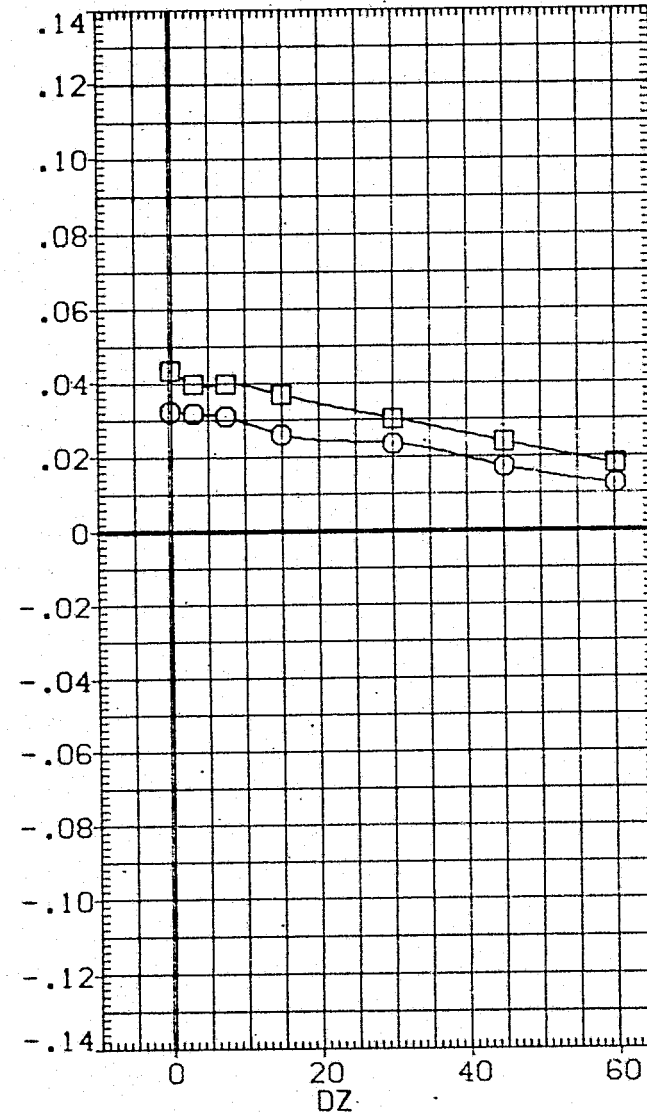


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0

10.000

ALPHAC

14.000

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

-5.000

ELV-0B

3.000

MACH

.600

OX

.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

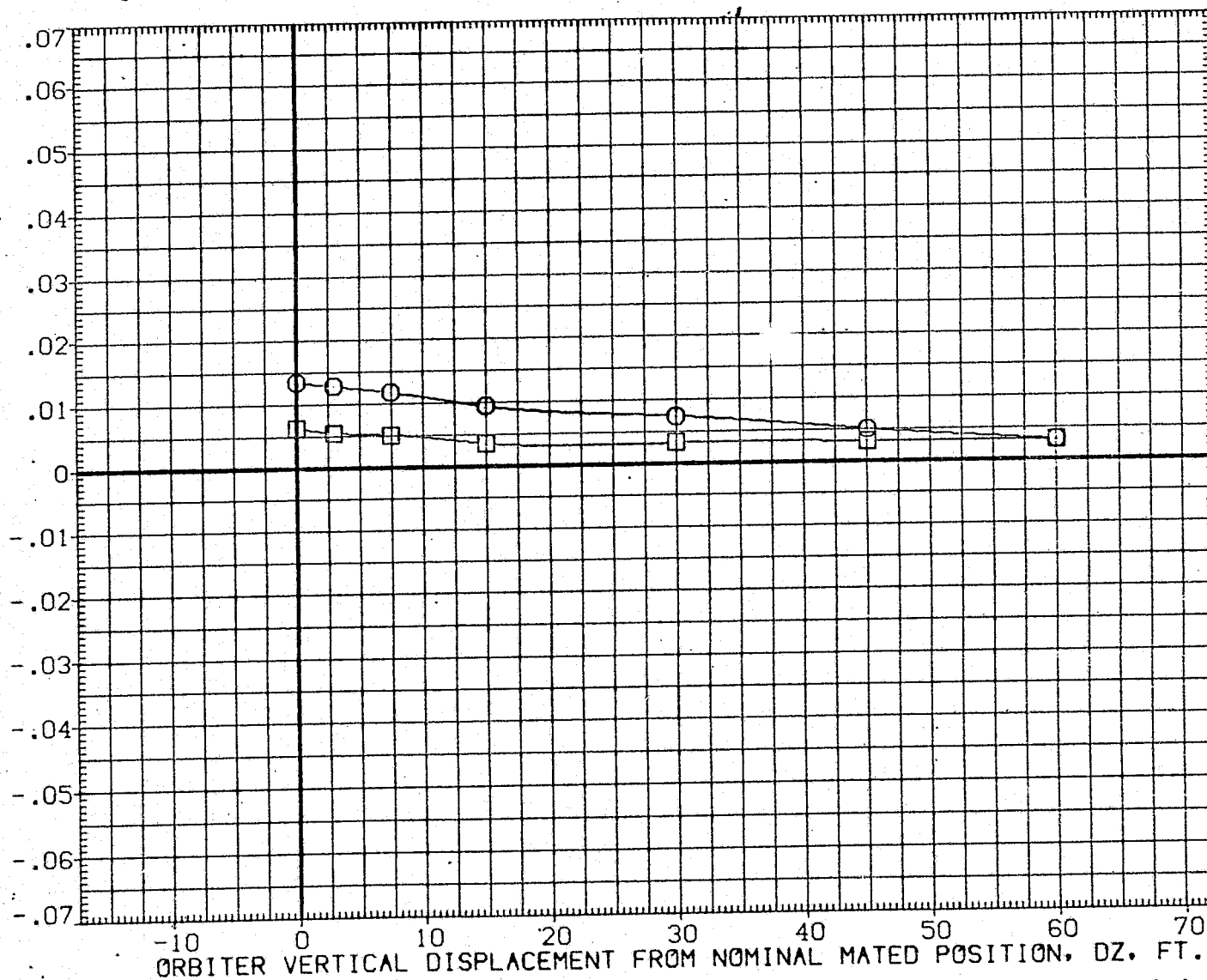


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (070 - 010) (VGN070)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 8.000	BETAC -5.000
□	14.000	ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		PHI .000	DX .000
		DY 10.000	BETA0 .000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

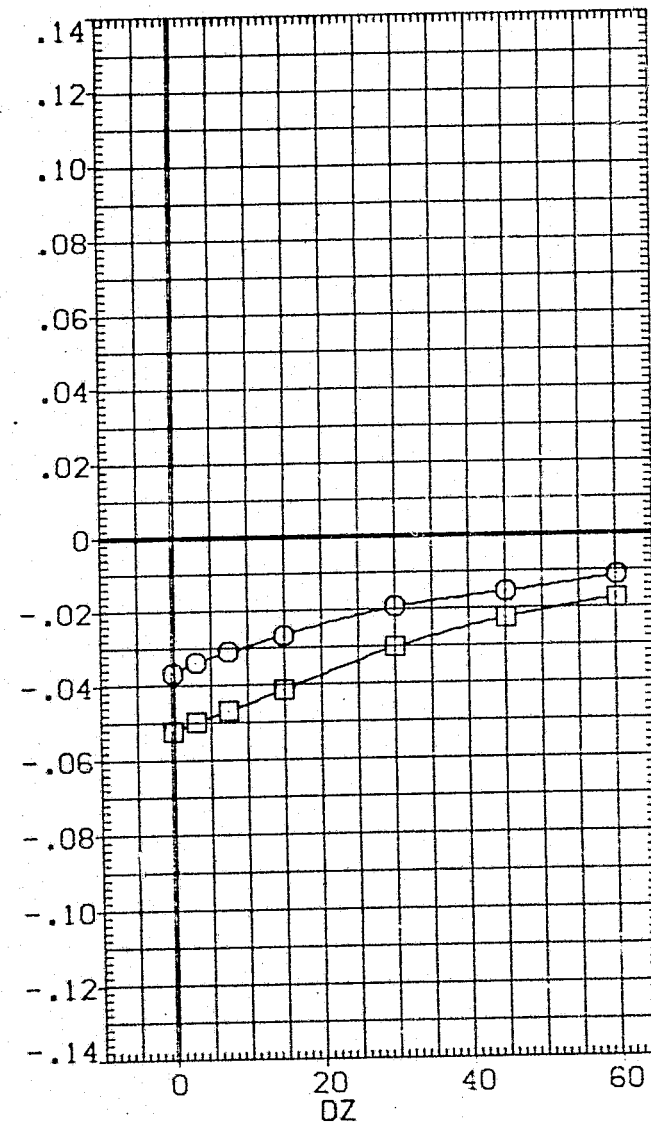
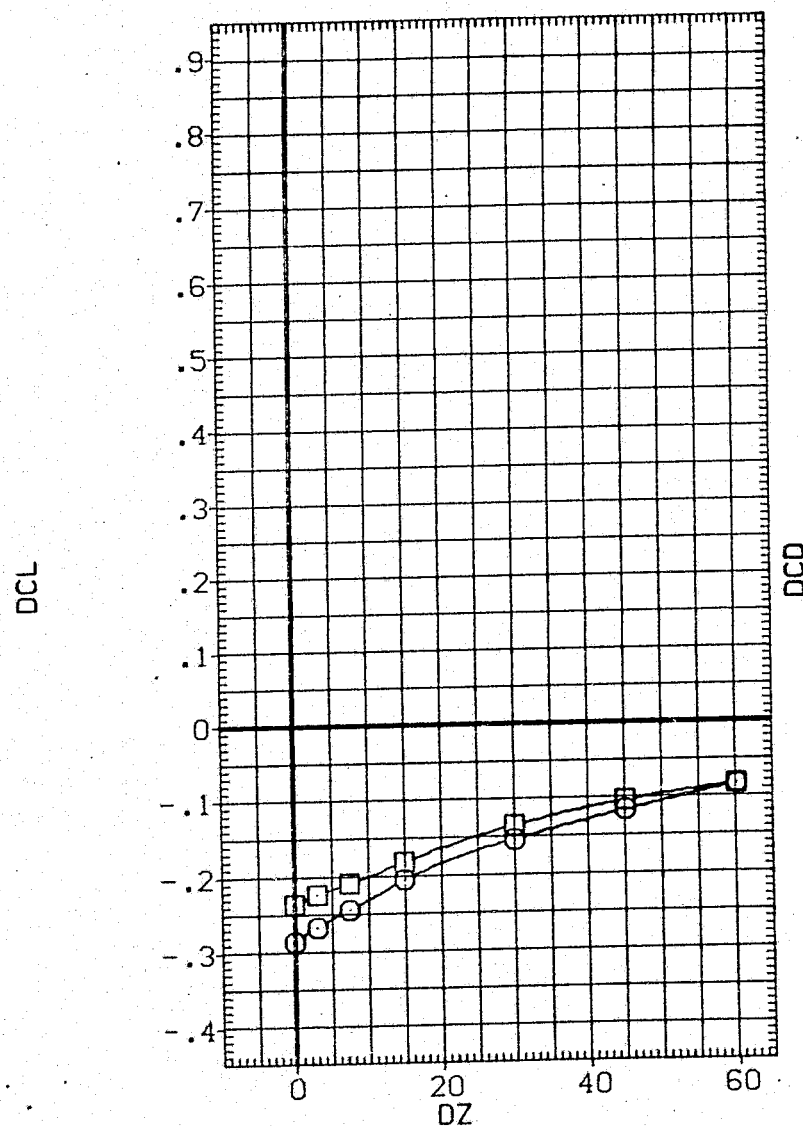


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN069)

SYMBOL	ALPHA0	PARAMETRIC VALUES	ELV-08	3.000
○	10.000	ELV-18	.000	
□	14.000	ELEVON	5.000	.600
		BETA0	.000	-5.000
		PHI	.000	10.000
		DX	10.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

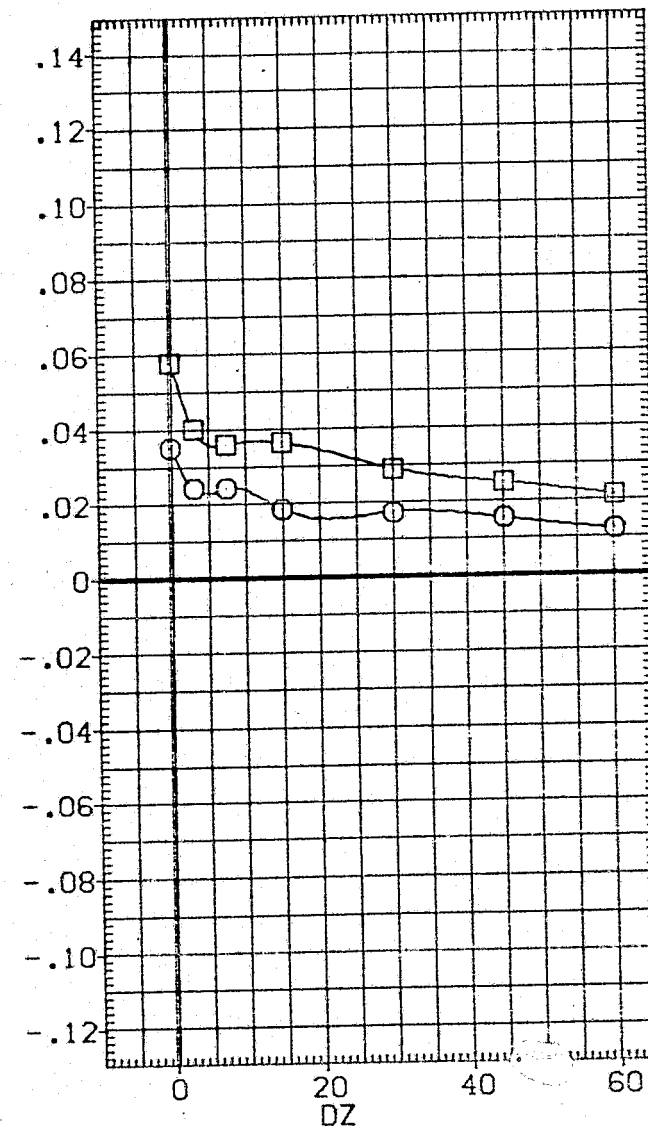
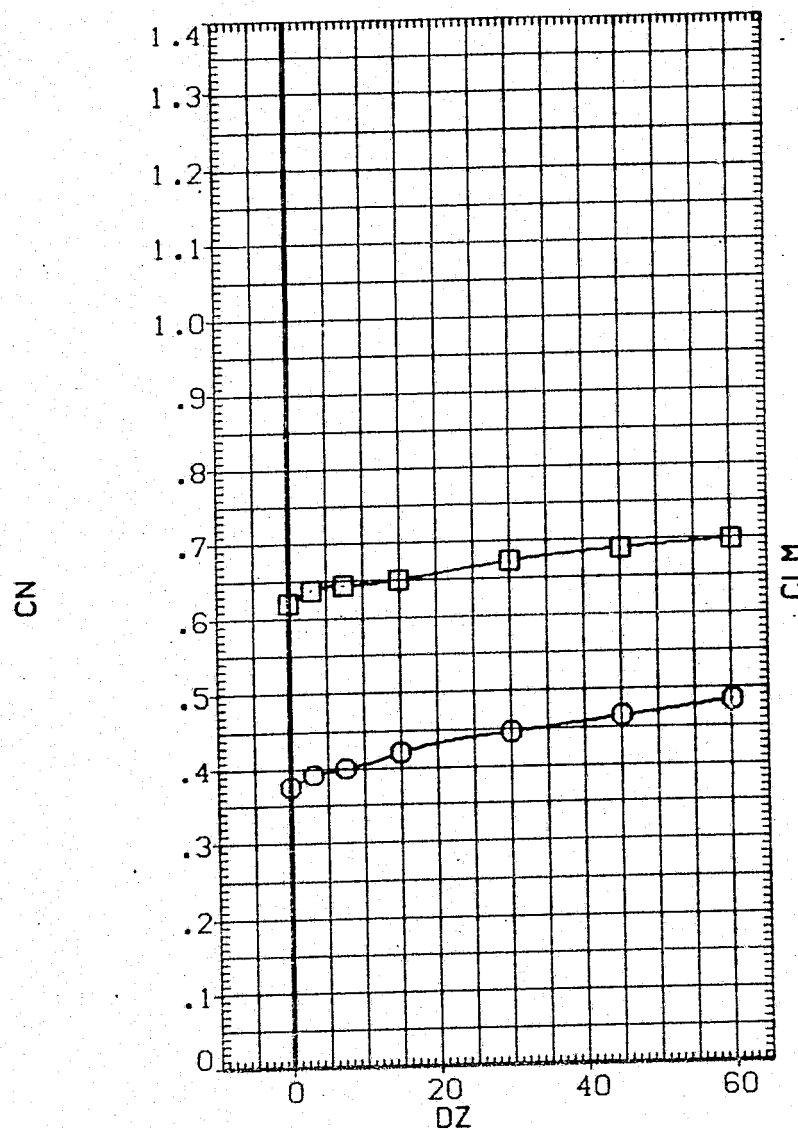


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN069)

SYMBOL

○
□

ALPHA0

10.000

14.000

PARAMETRIC VALUES

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

BETA0

.000

BETAC

-5.000

PHI

.000

DY

10.000

DX

10.000

ALPHAC

4.000

REFERENCE INFORMATION

SREF

2690.0000

50.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

AXIAL FORCE COEFFICIENT, CA

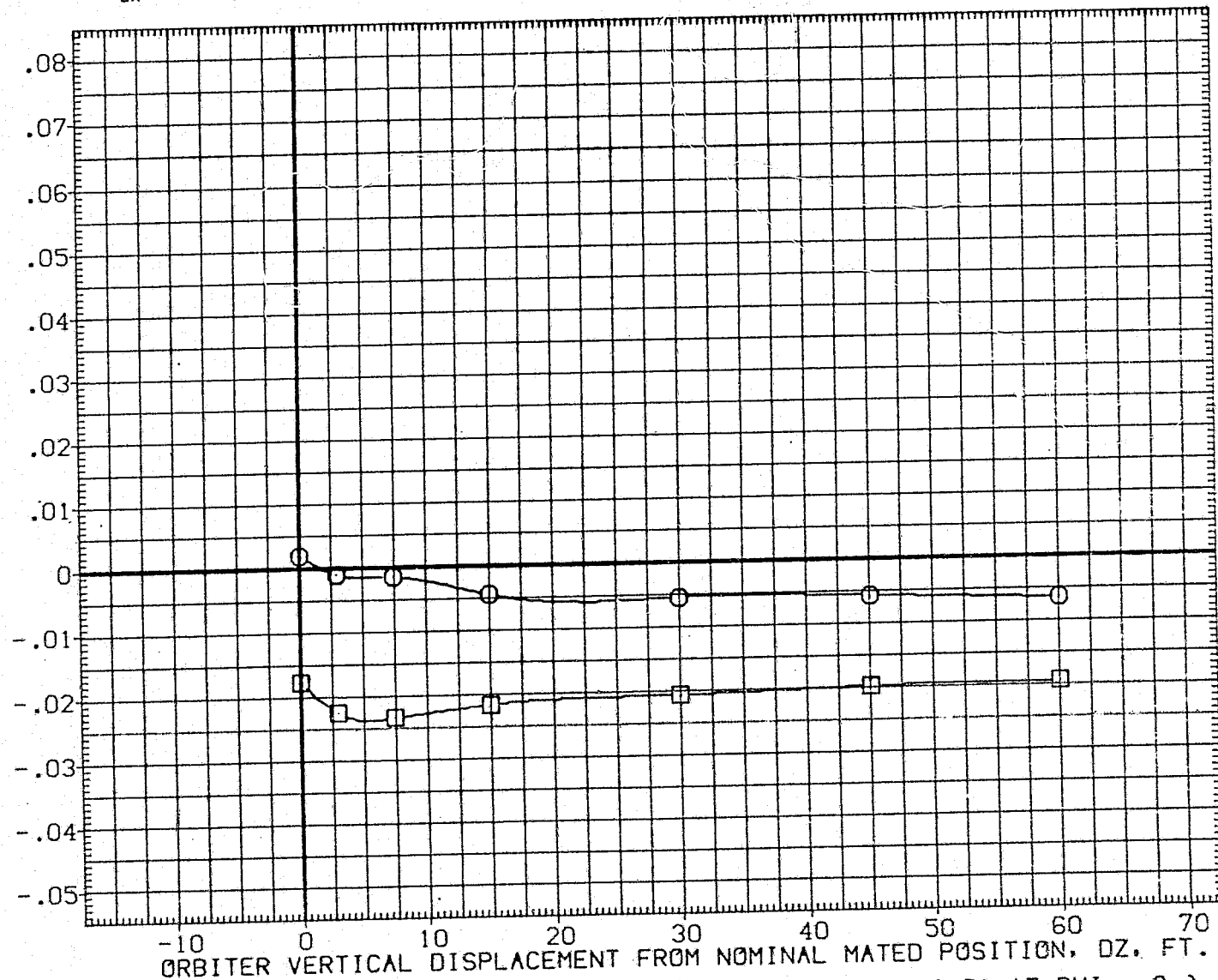


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN069)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

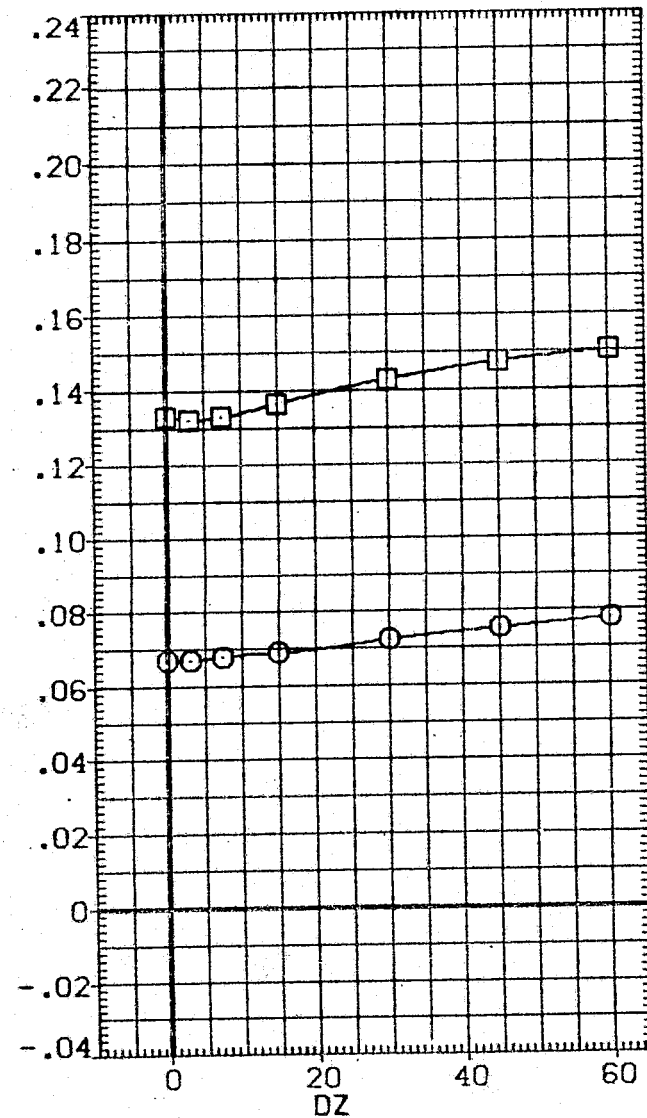
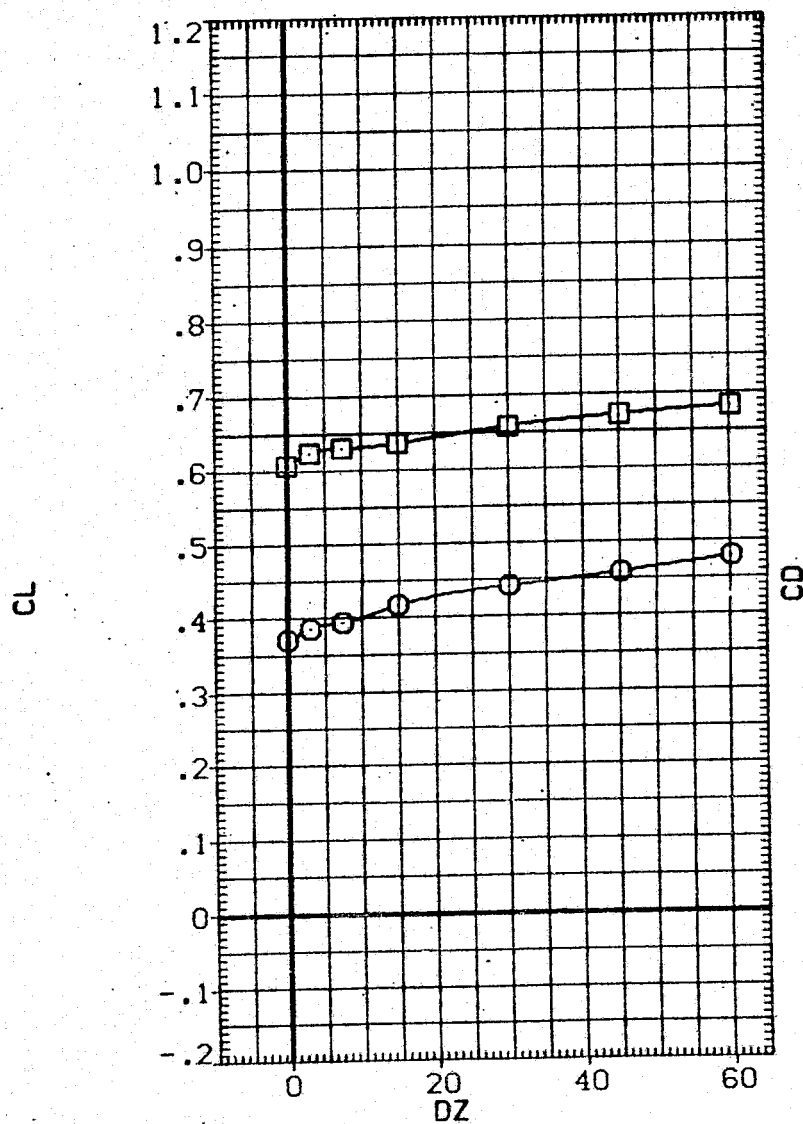


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN069)

SYMBOL



ALPHA0

10.000

ELV-1B

PARAMETRIC VALUES

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

BETA0

.000

BETAC

-5.000

PHI

.000

DY

10.000

DX

10.000

ALPHAC

4.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

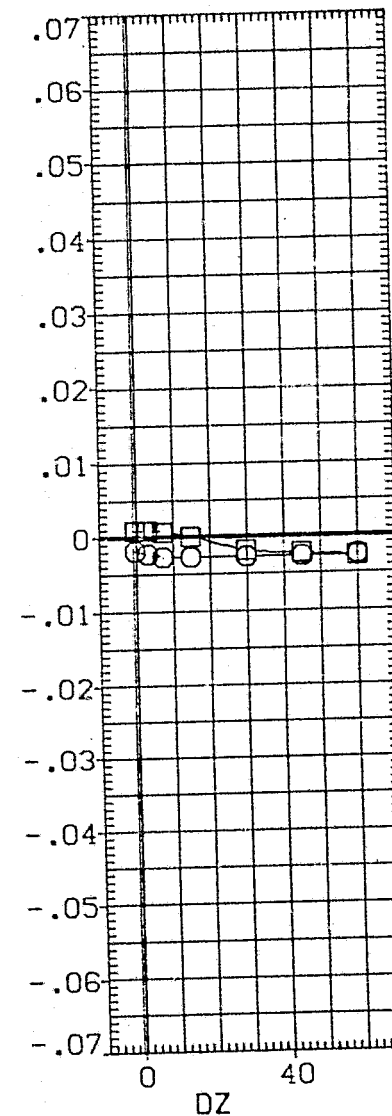
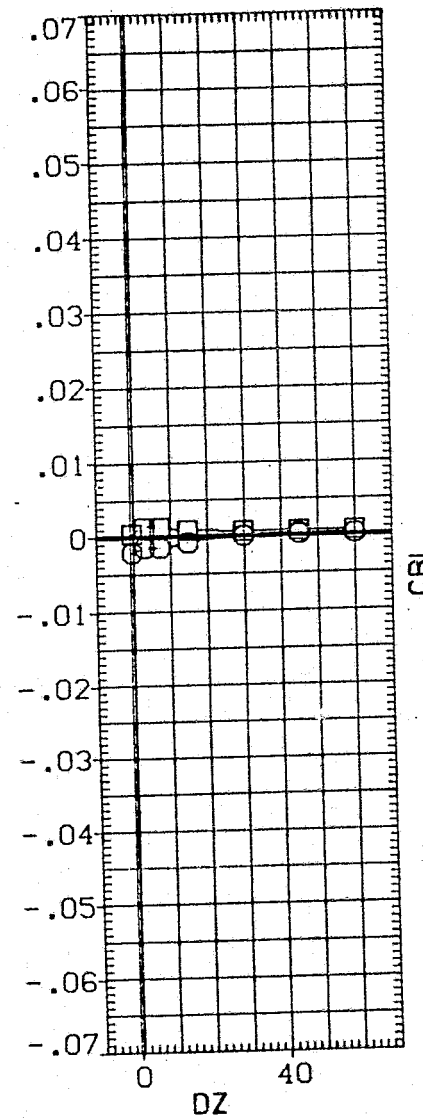
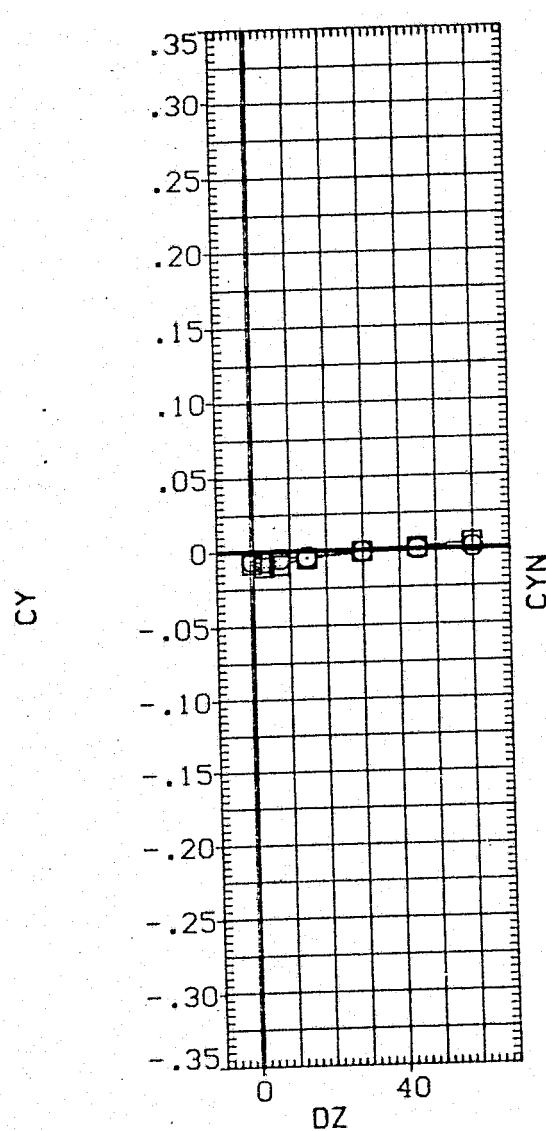


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRI	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

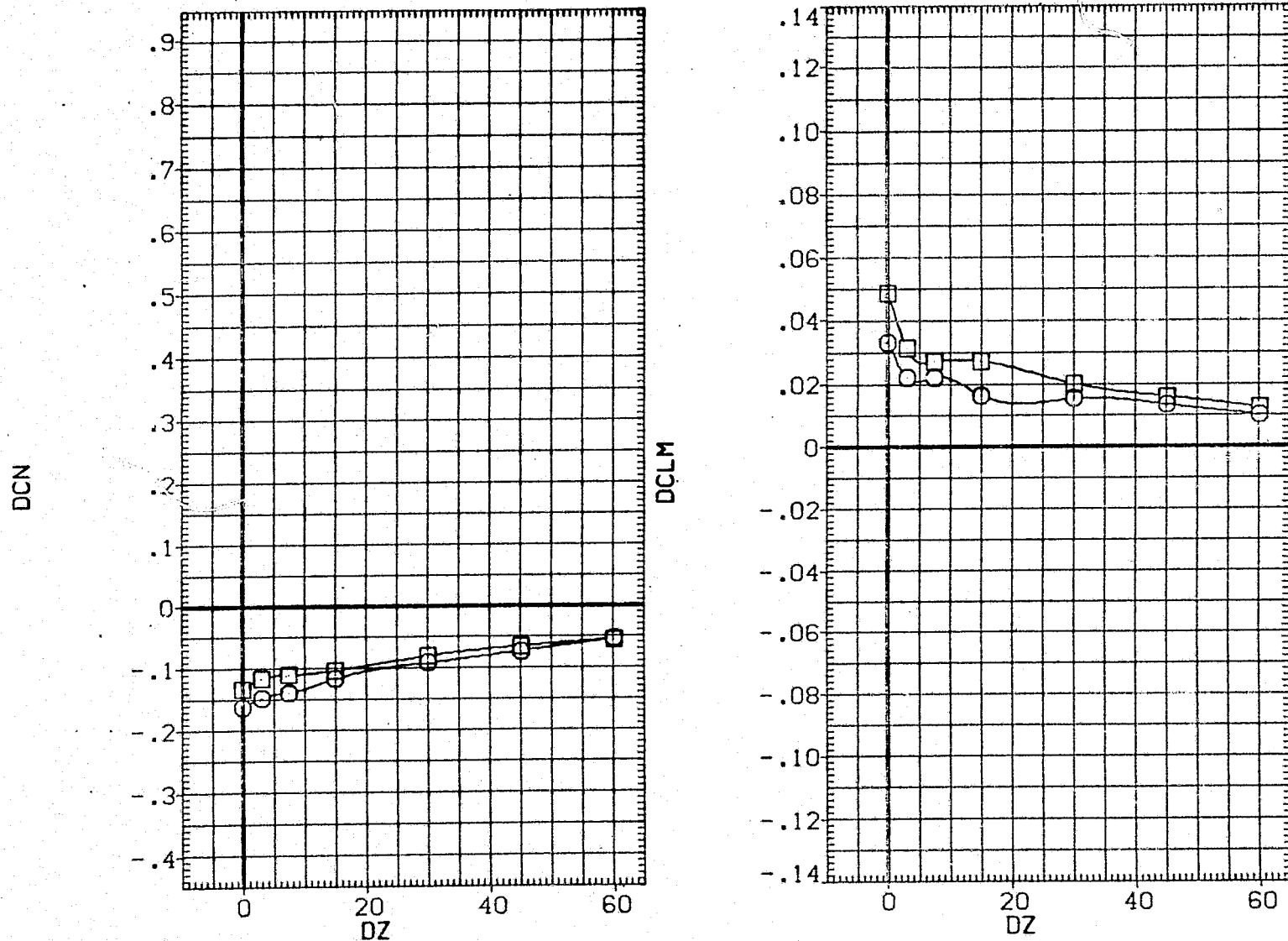


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (069 - 010) (VGN069)

SYMBOL	ALPHA0		PARAMETRIC VALUES				REFERENCE INFORMATION		
	10.000	14.000	ALPHAC	4.000	BETAC	-5.000	SREF	2690.0000	50.FT.
○			ELV-IB	.000	ELV-CB	3.000	LREF	474.8100	IN.
□			ELEVON	5.000	MACH	.600	BREF	936.6800	IN.
			PHI	.000	DX	10.000	XMRP	1109.0000	IN.X0
			DY	10.000	BETA0	.000	YMRP	.0000	IN.Y0
							ZMRP	375.0000	IN.Z0
							SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

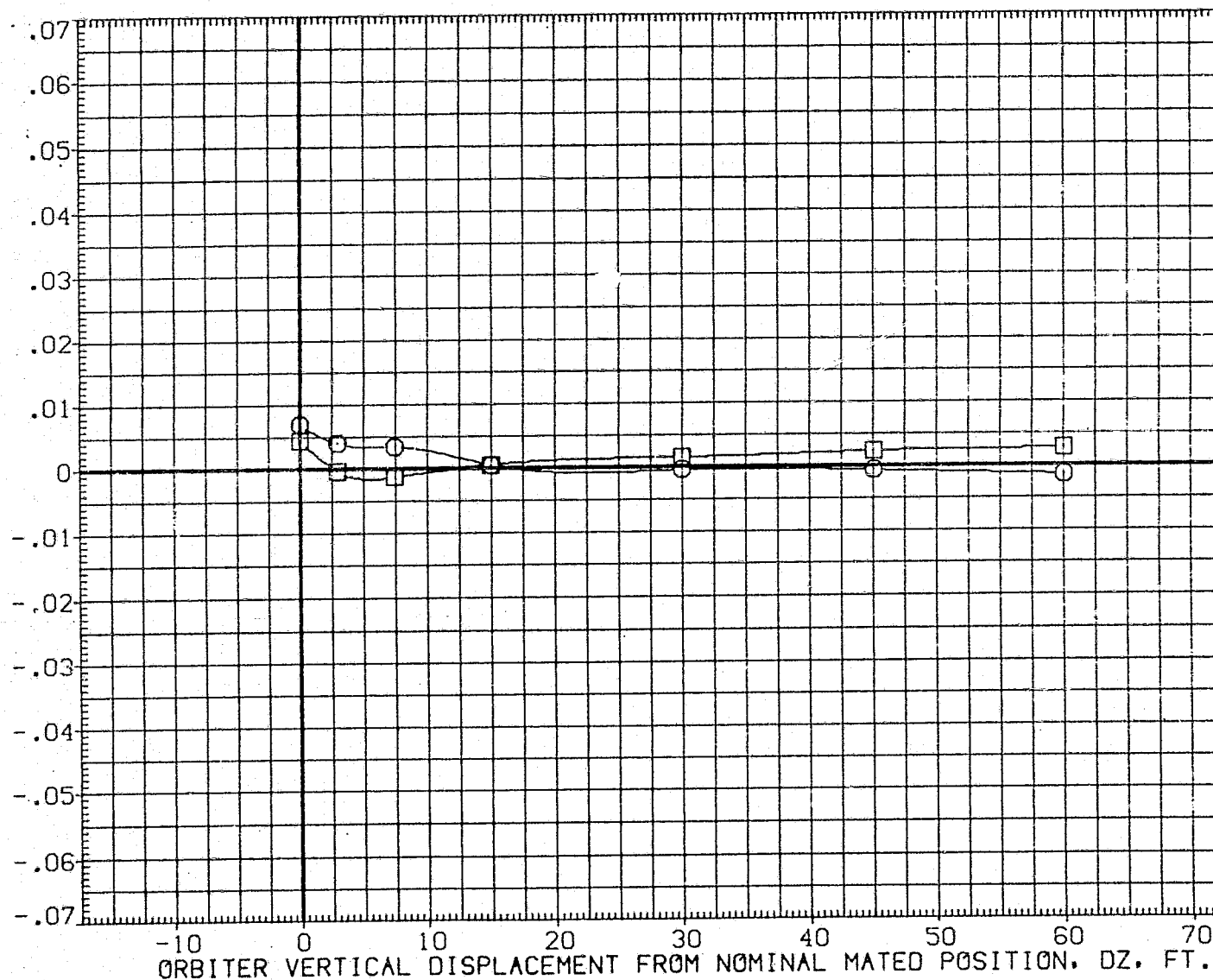


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

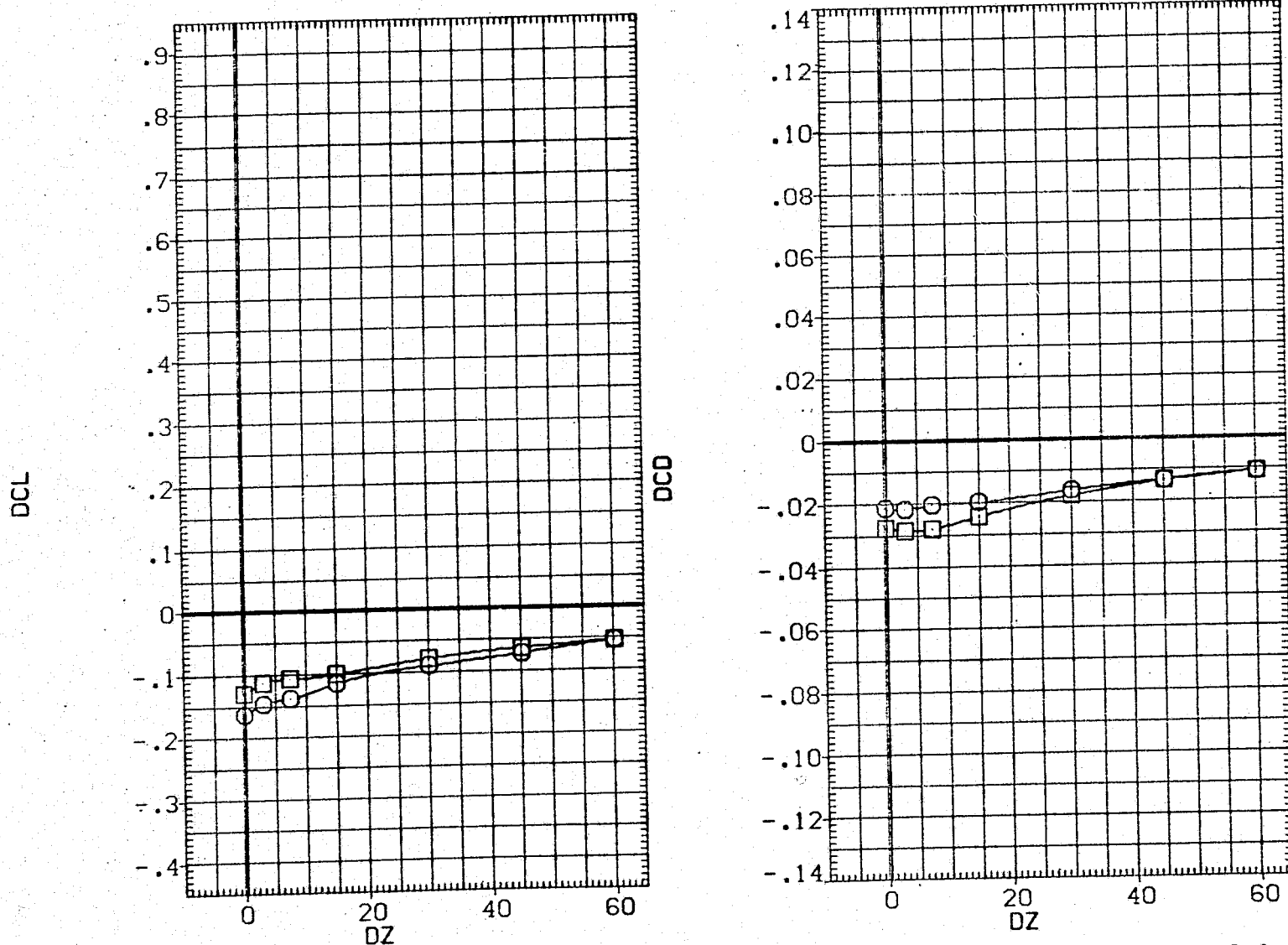


FIG 26 - VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN071)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI .000 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

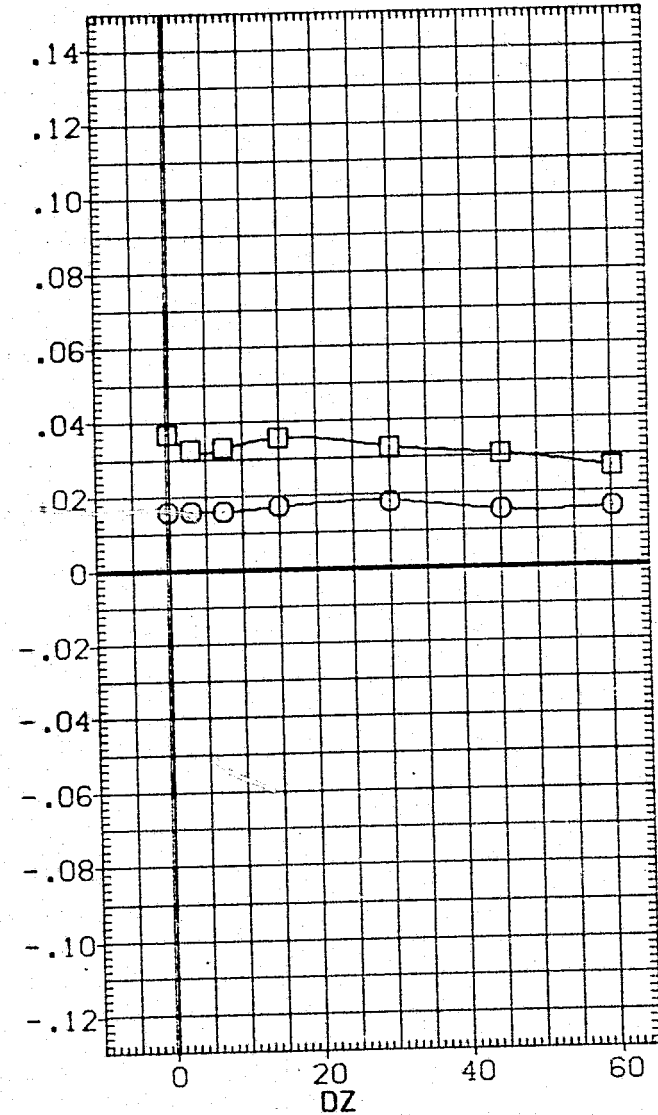
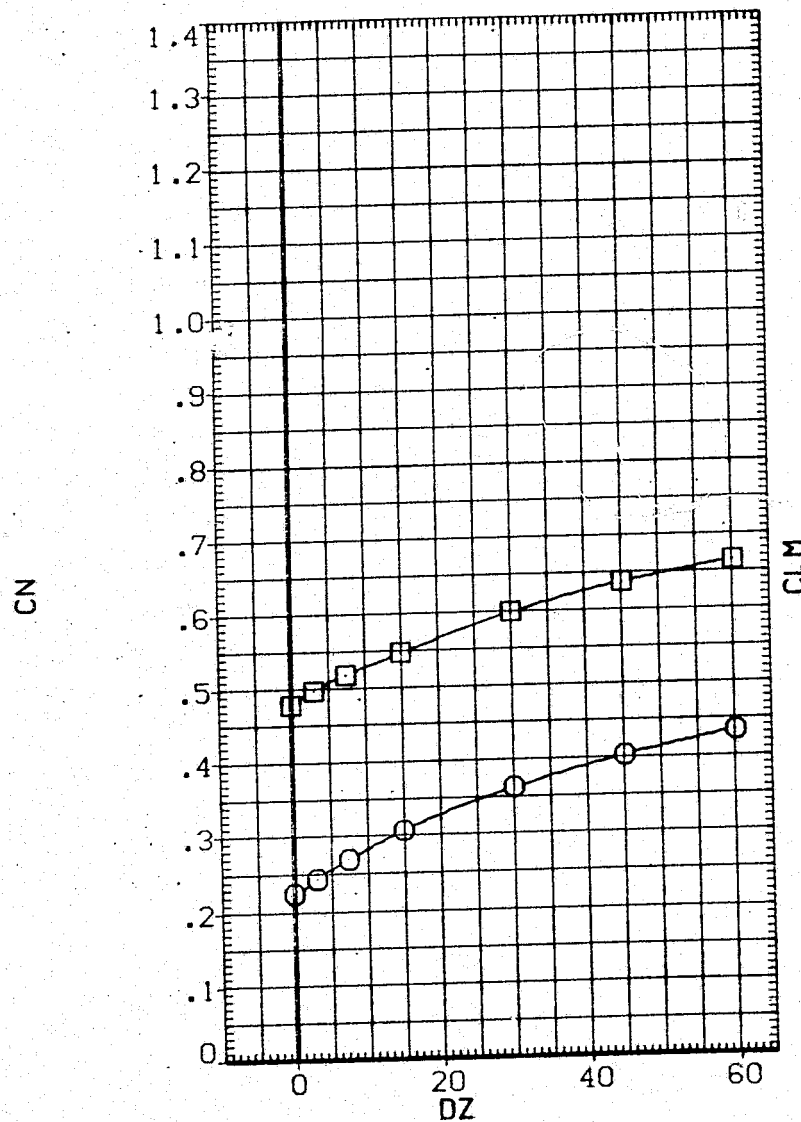


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI .000 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

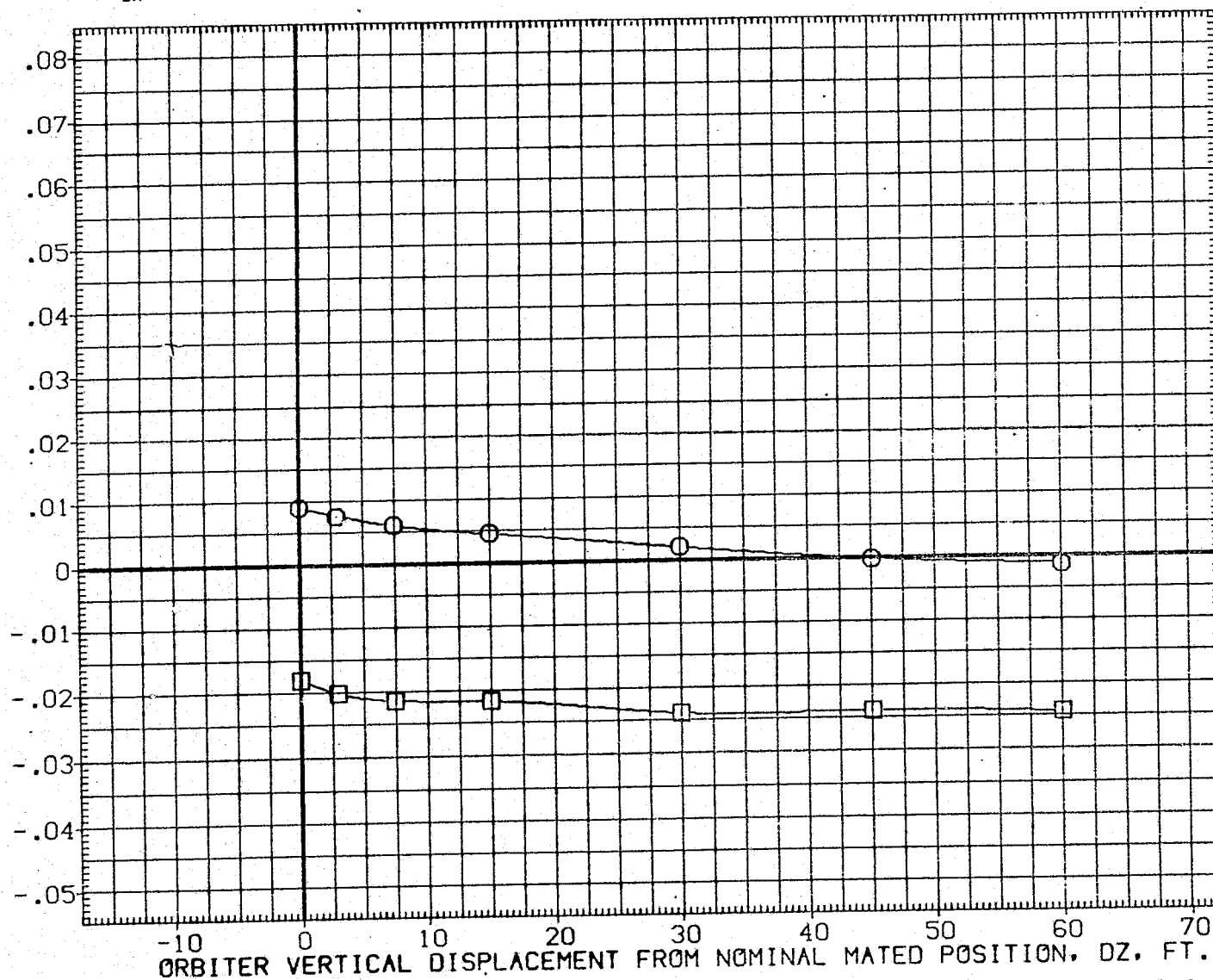


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN071)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI .000 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

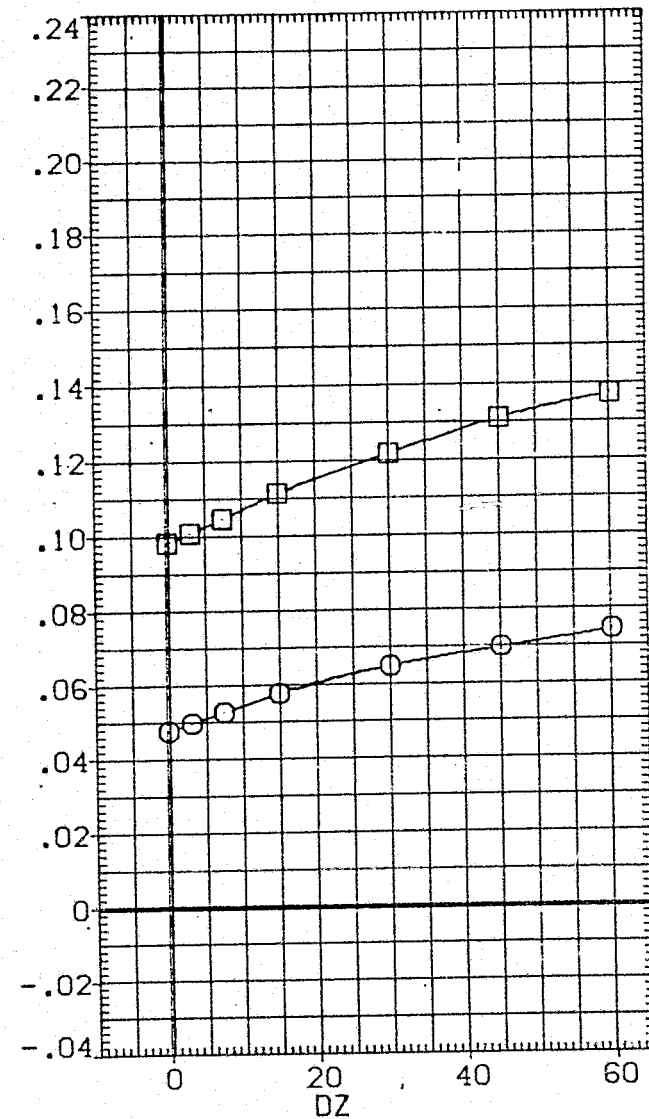
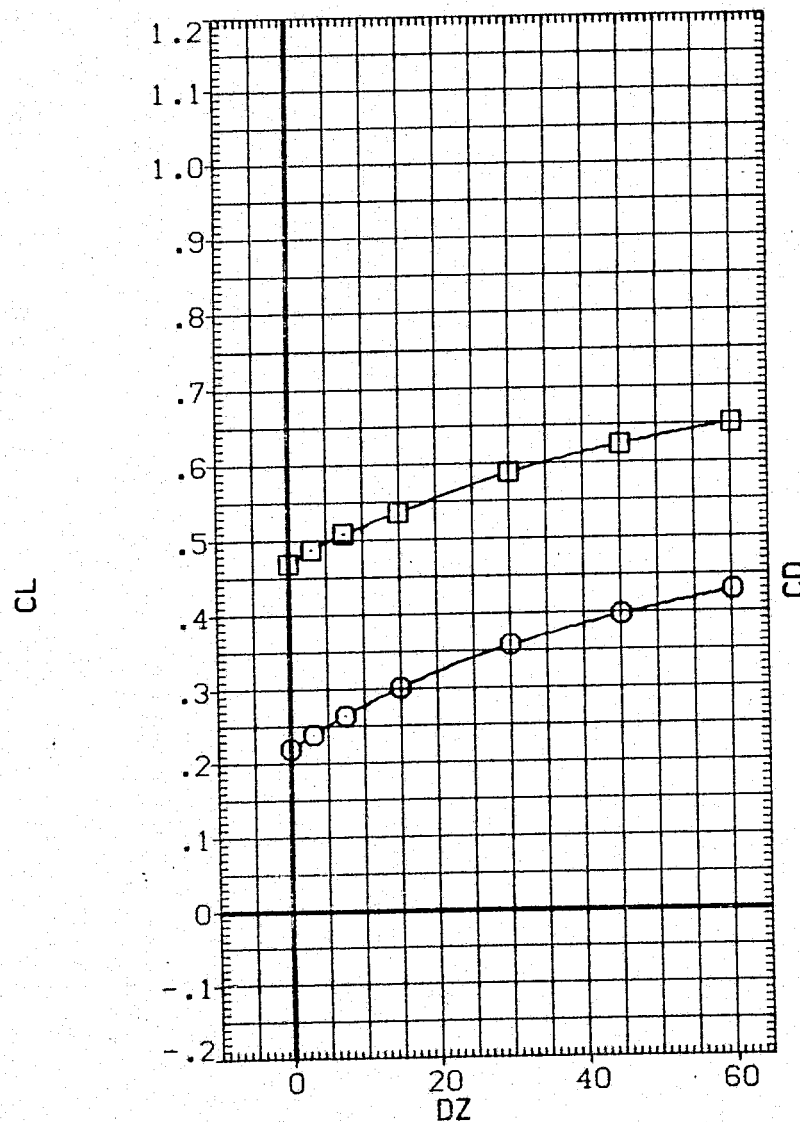


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN071)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000	
□	14.000	ELEV0N	5.000	MACH	.600	
		BETA0	.000	BETAC	-5.000	
		PHI	.000	DY	10.000	
		DX	10.000	ALPHAC	8.000	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

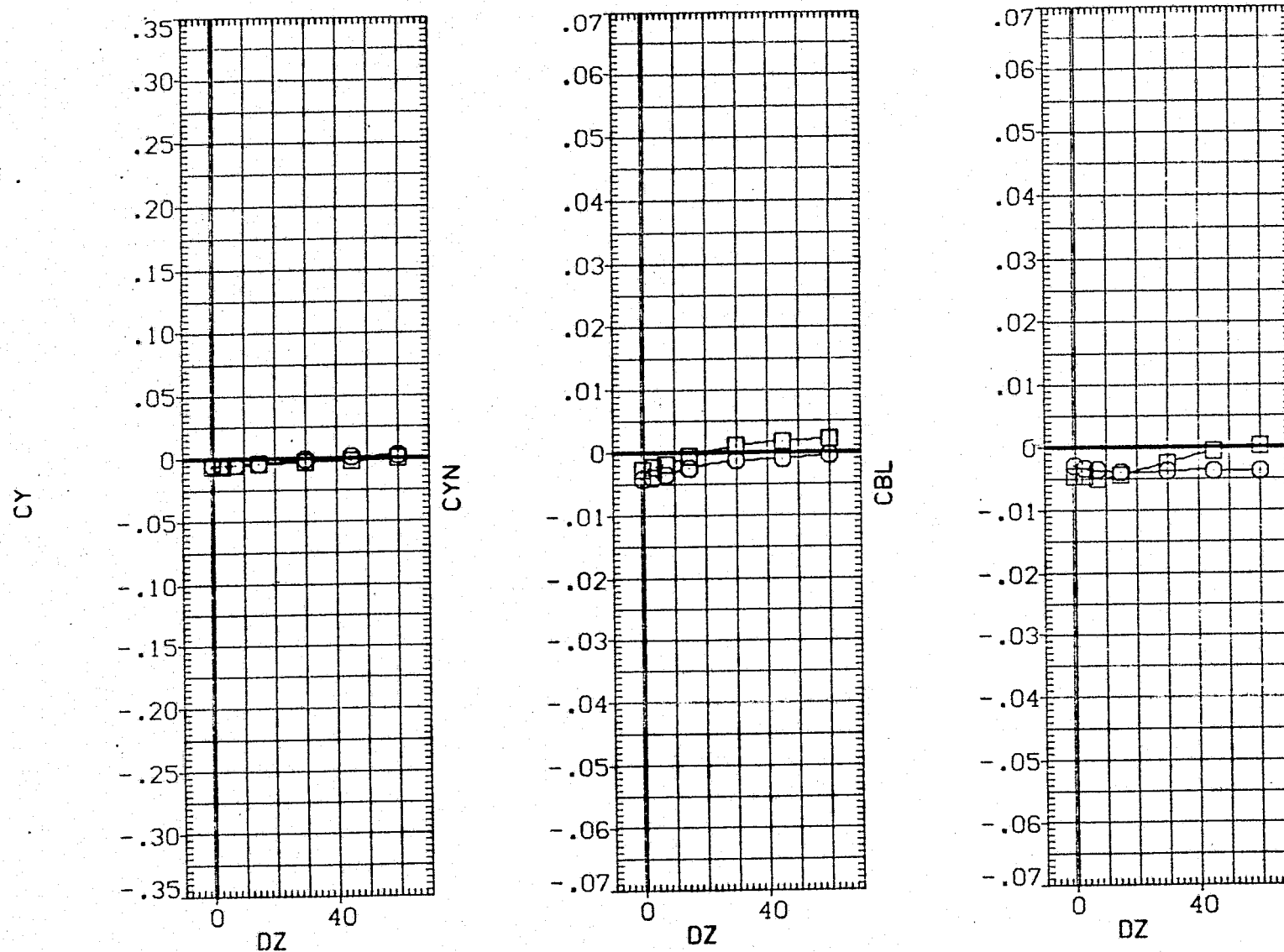


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (071 - 010)(VGN071)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

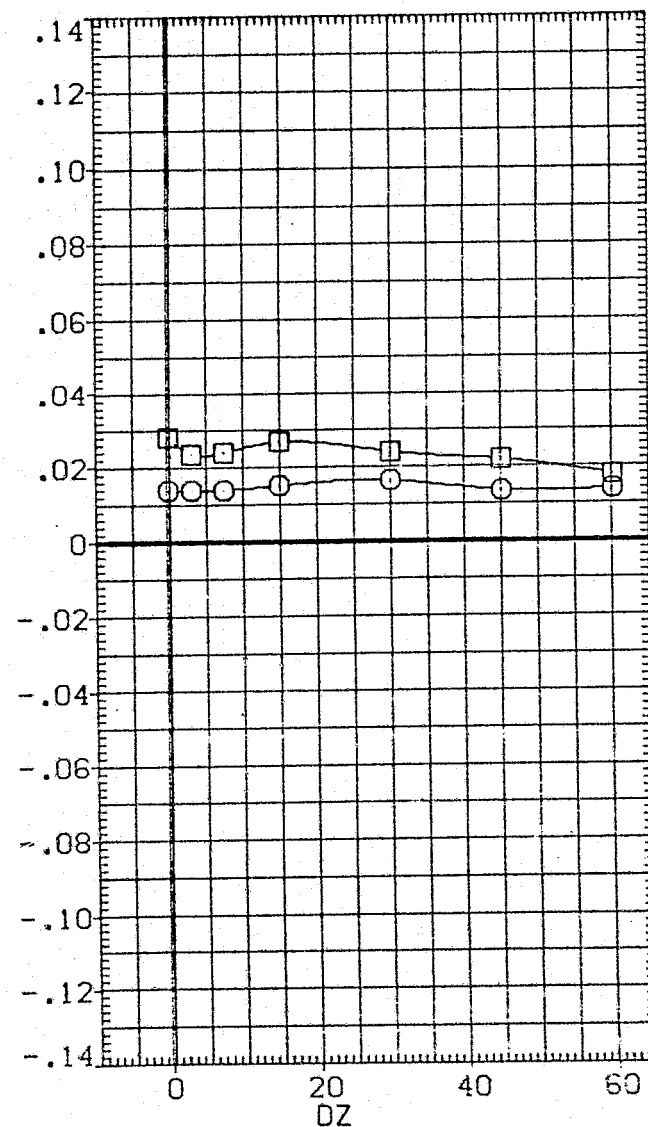
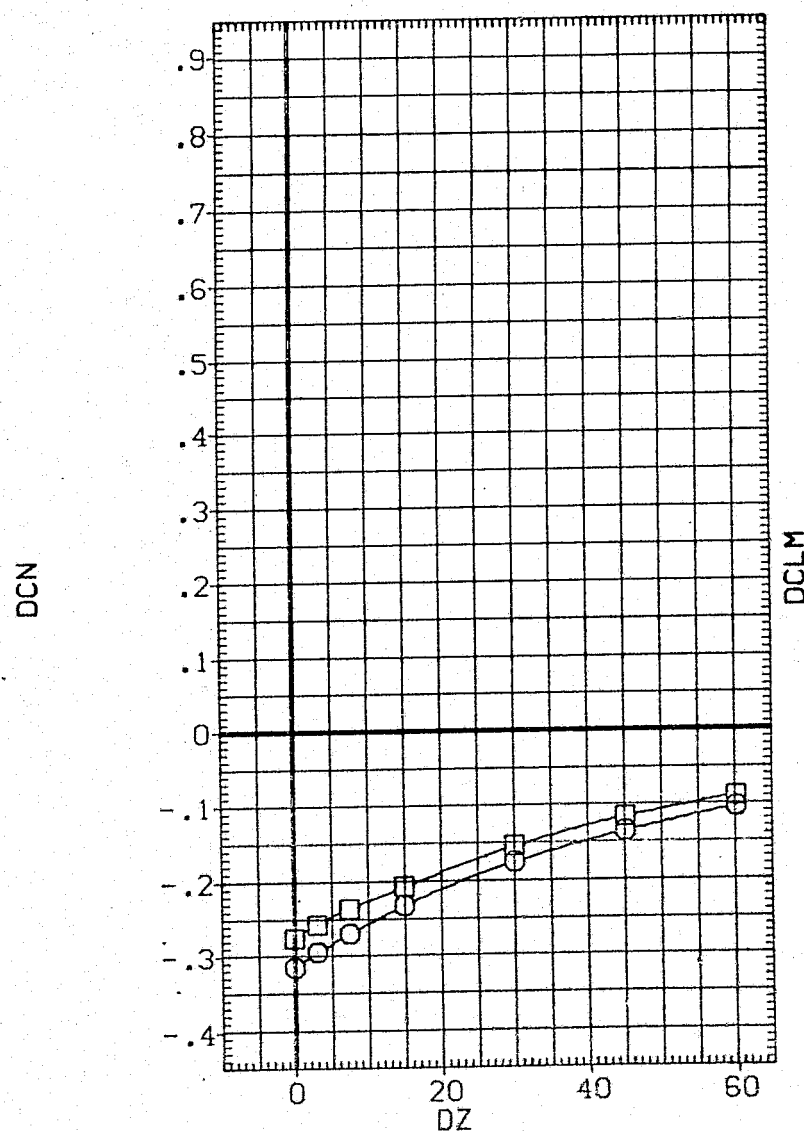


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	-5.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1108.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

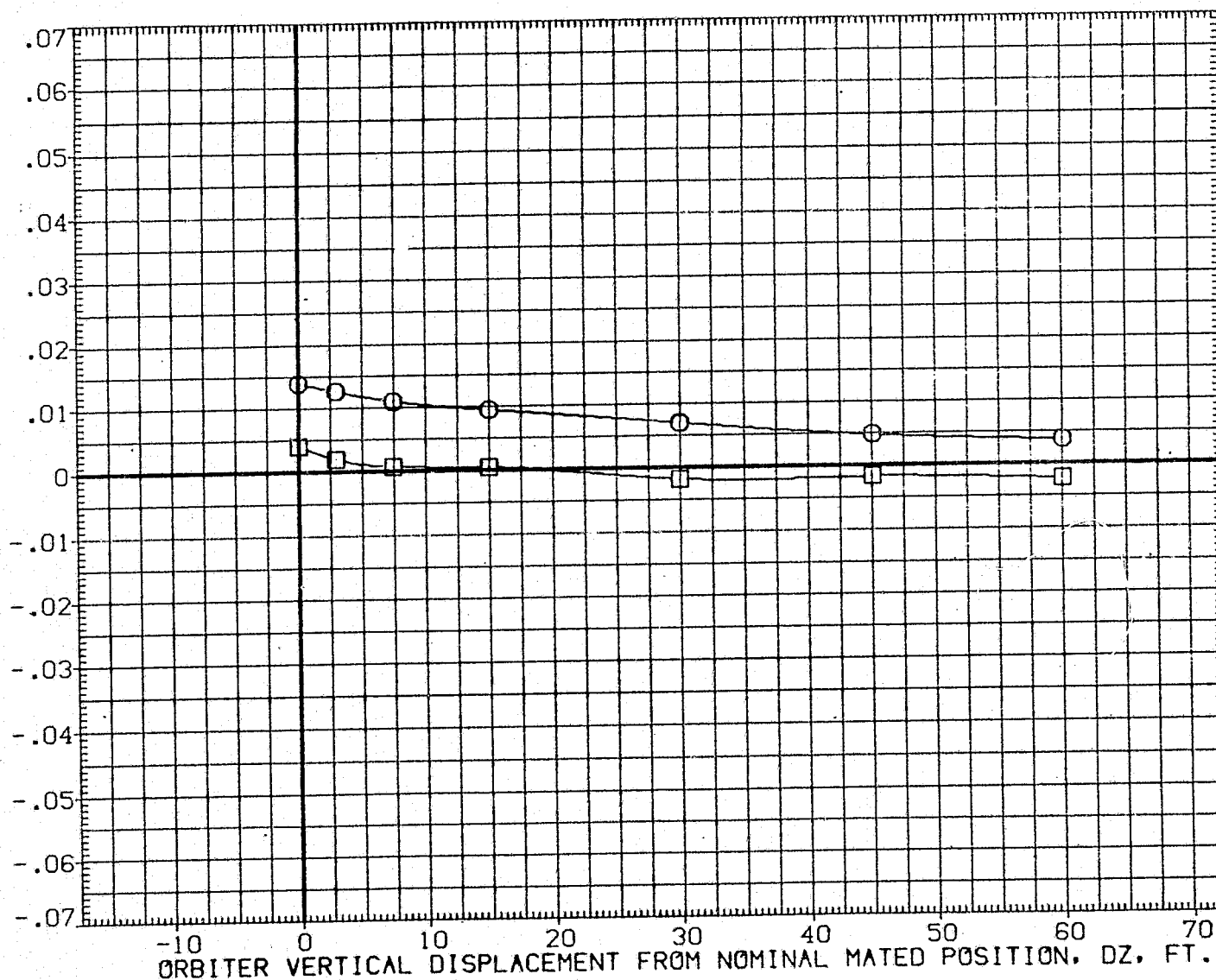


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (071 - 010) (VGN071)

SYMBOL

○

□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

ELV-OB

MACH

DX

BETA0

-5.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

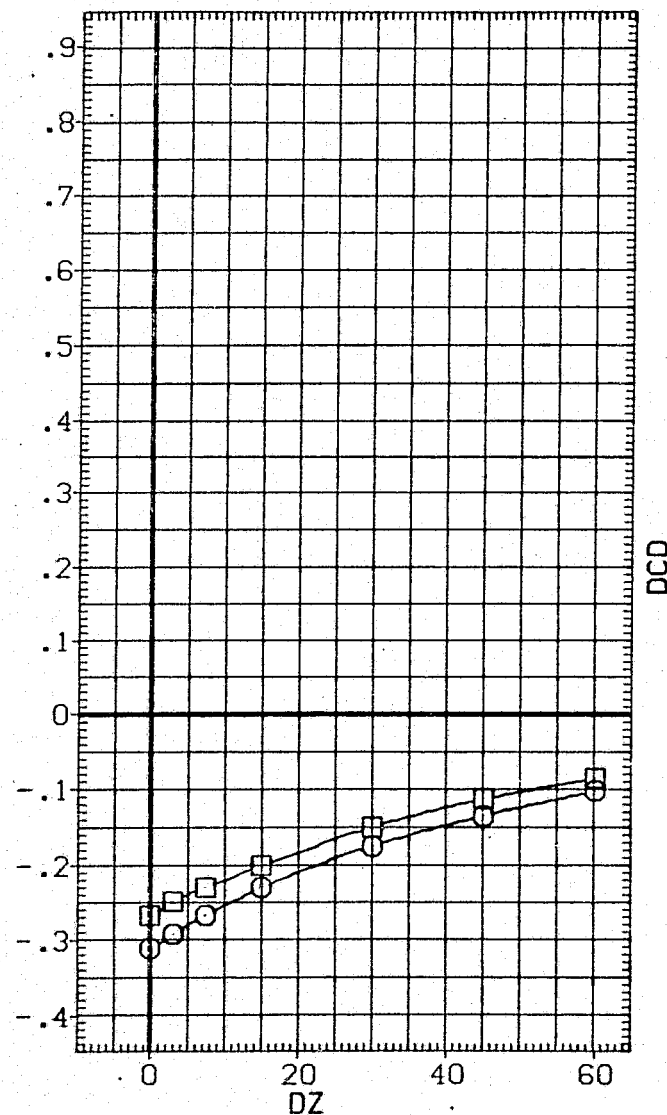
375.0000

IN.Z0

SCALE

.0300

DCL



DCD

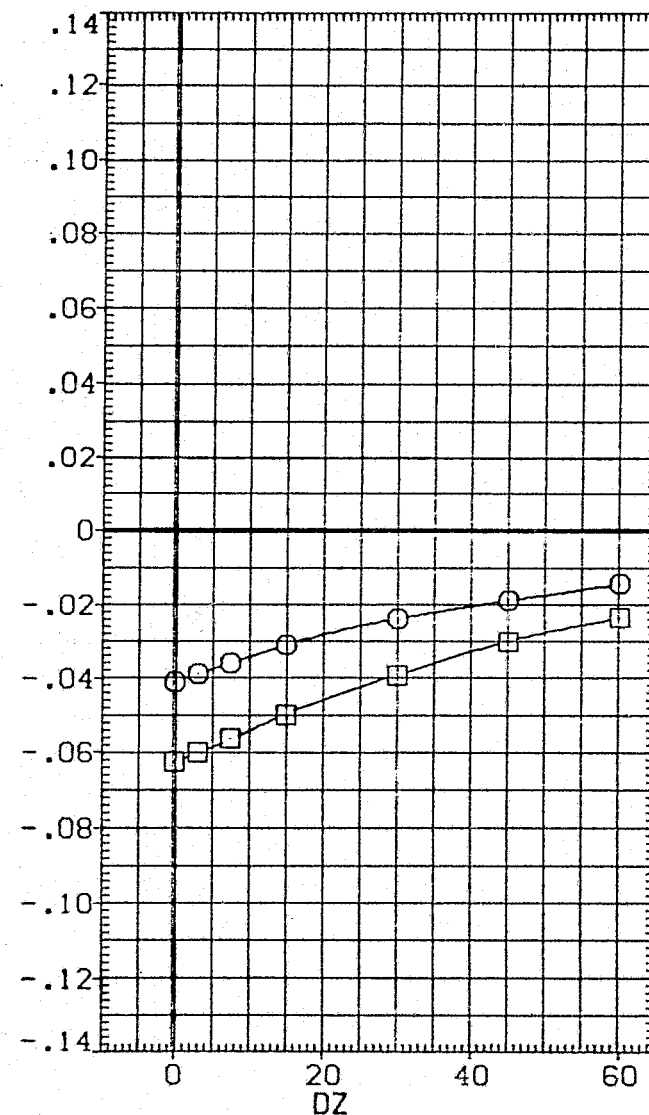


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01. S1

ORBITER DATA (2GN049)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-1B	
○	6.000	BETAC	.000	ELV-1B	.000
□	10.000	ELV-0B	3.000	ELEVON	5.000
◇	14.000	MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		ALPHAC	.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XM RP	1109.0000	IN.X0
YM RP	.0000	IN.Y0
ZM RP	375.0000	IN.Z0
SCALE	.0300	

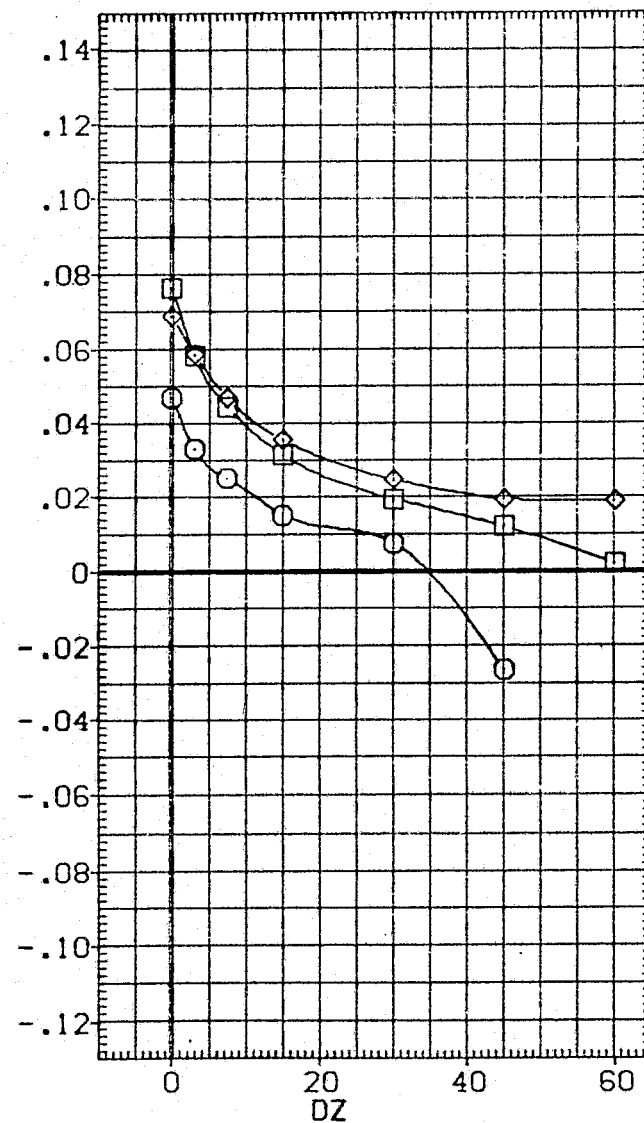
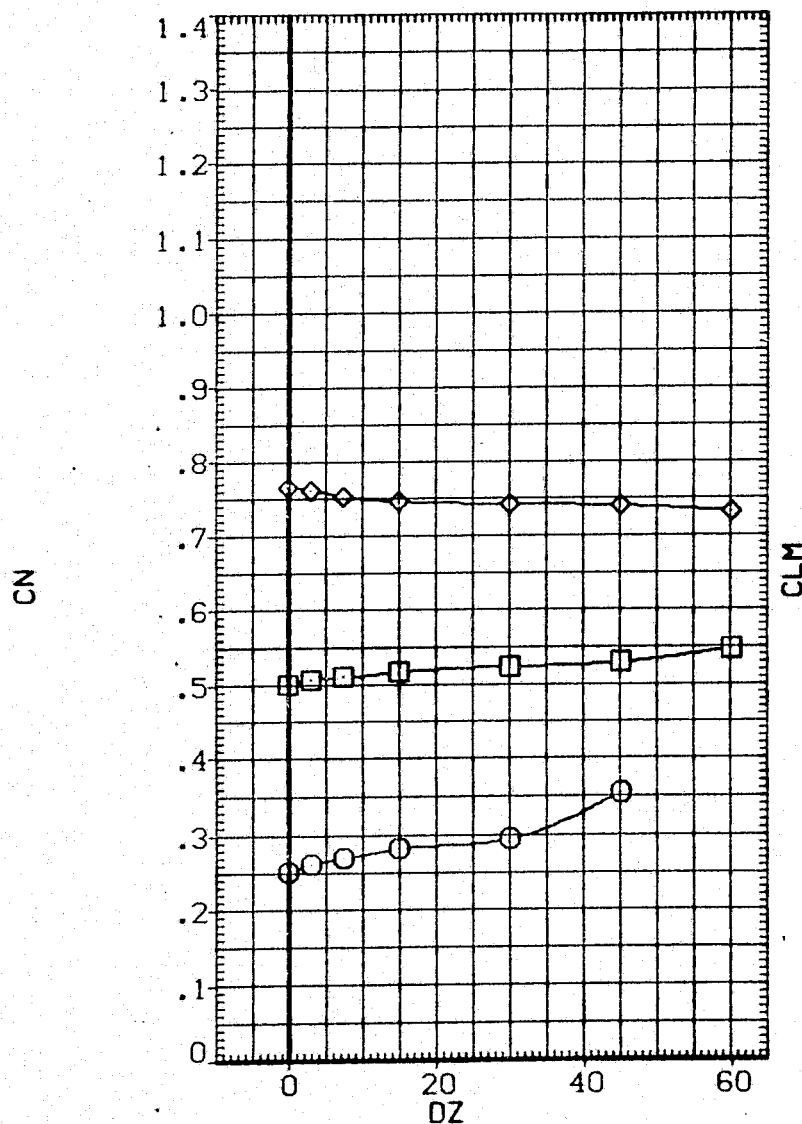


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (26N049)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-IB	
○	6.000	.000	ELV-OB	3.000	.000
□	10.000	.600	BETAC	.000	5.000
◇	14.000	.000	PHI	.000	.000
		.000	ALPHAC	.000	.000
		.000	DX	.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

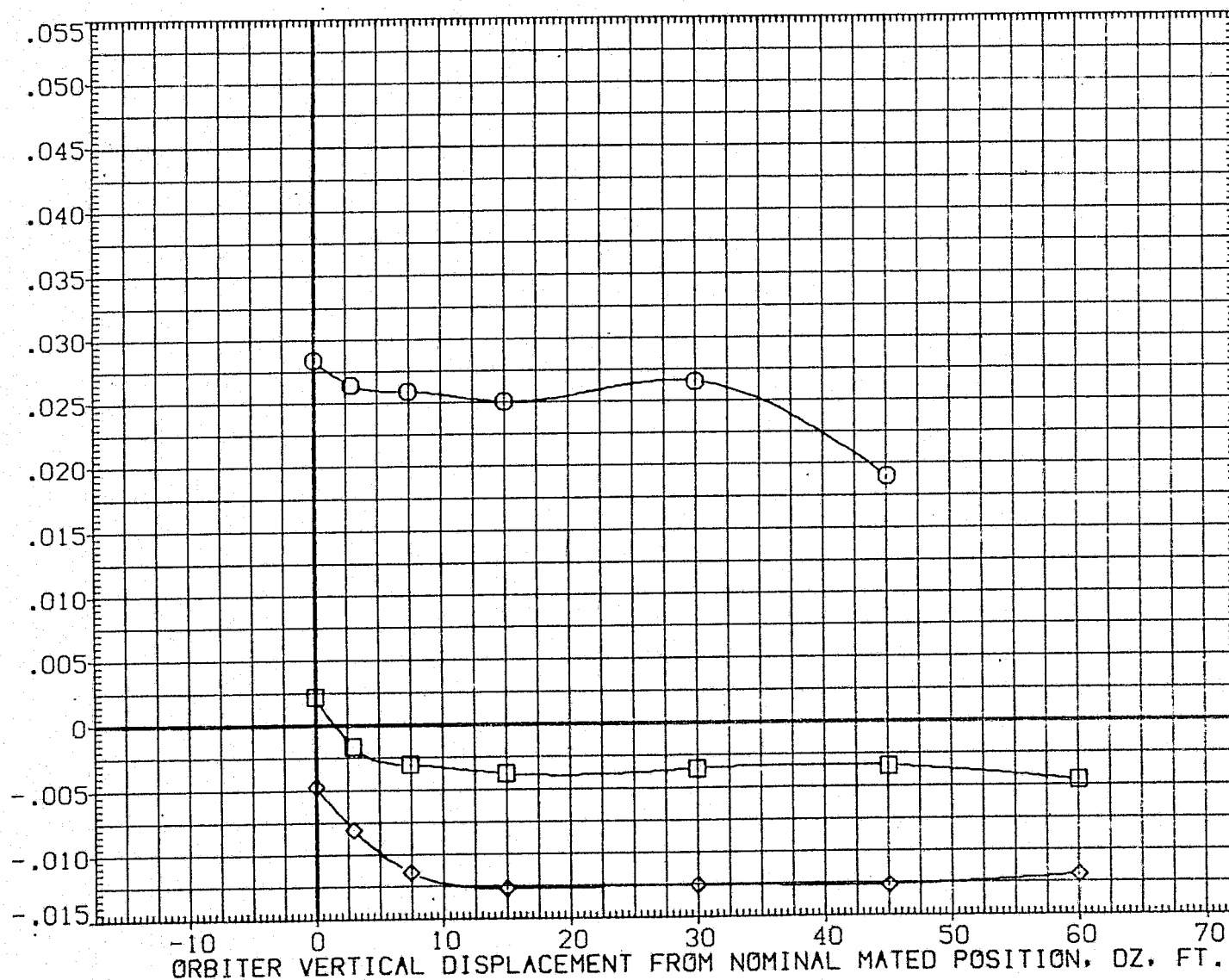


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-18	
○	6.000	.000	ELV-08	.000	
□	10.000	3.000	ELEVON	5.000	
◇	14.000	.600	BETA0	.000	
		.000	DY	.000	
		.000	DX	.000	

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

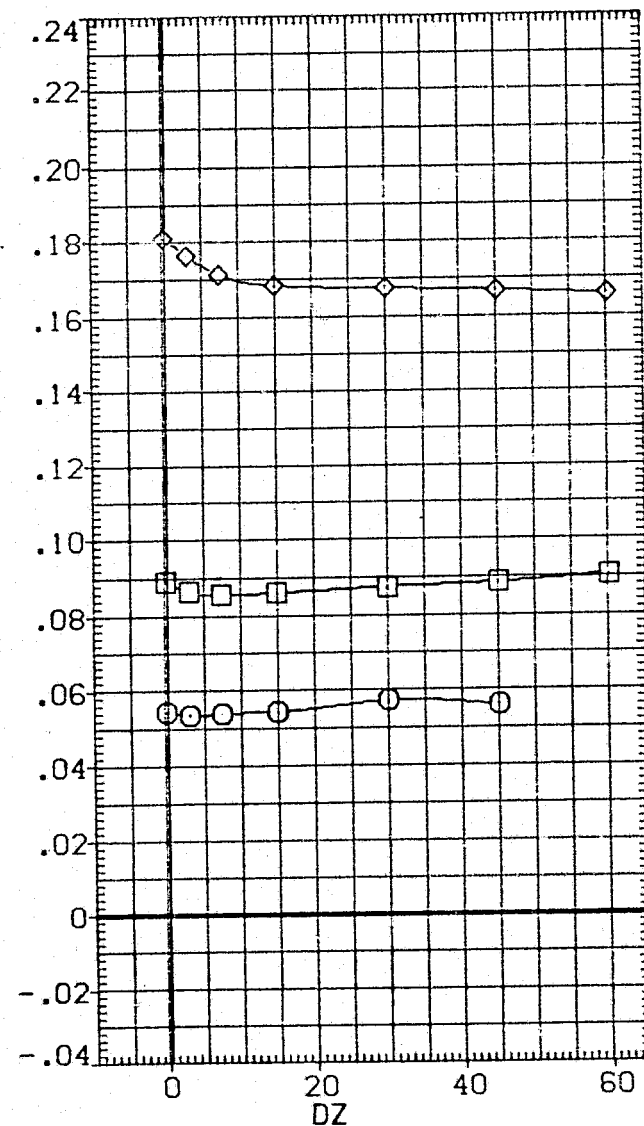
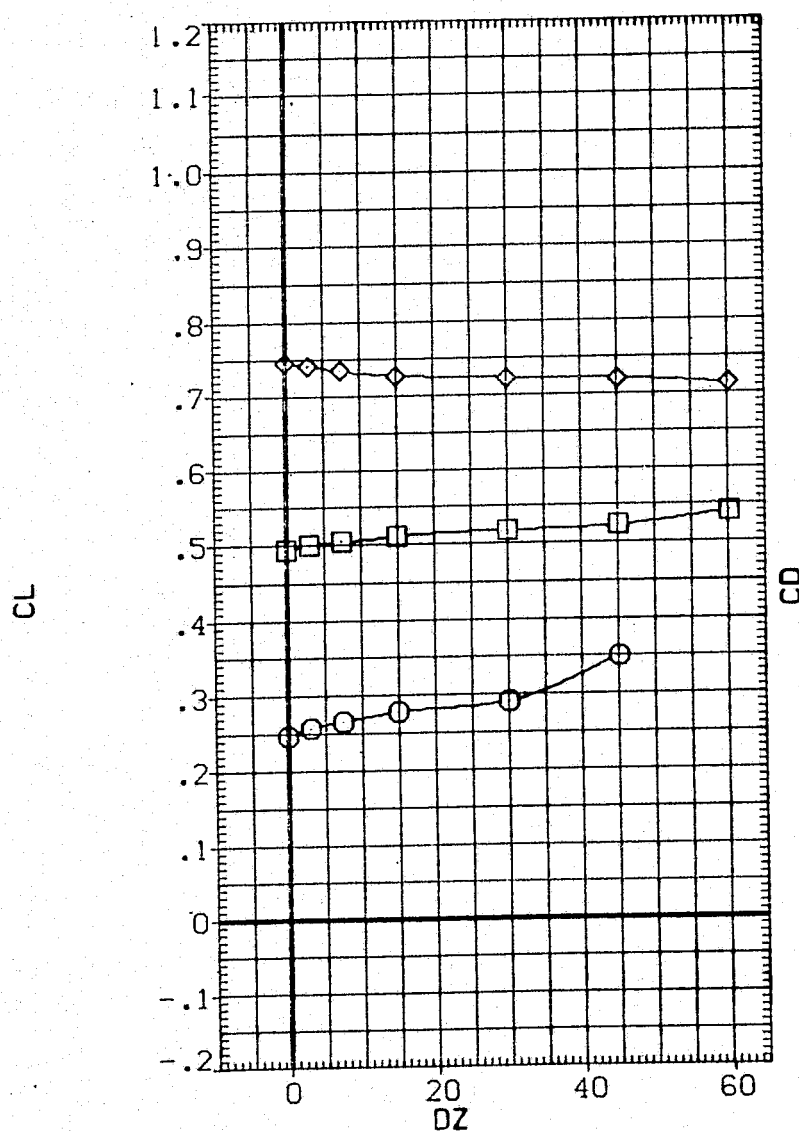


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(26N049)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-18
○	6.000	BETAC	.000	5.000
□	10.000	ELV-OB	3.000	.000
◇	14.000	MACH	.600	BETA0
		PHI	.000	DY
		ALPHAC	.000	DX

REFERENCE INFORMATION	
SREF	2690.0000 SQ.FT.
LREF	474.8100 IN.
BREF	936.6800 IN.
XMRP	1109.0000 IN.X0
YMRP	.0000 IN.Y0
ZMRP	375.0000 IN.Z0
SCALE	.0300

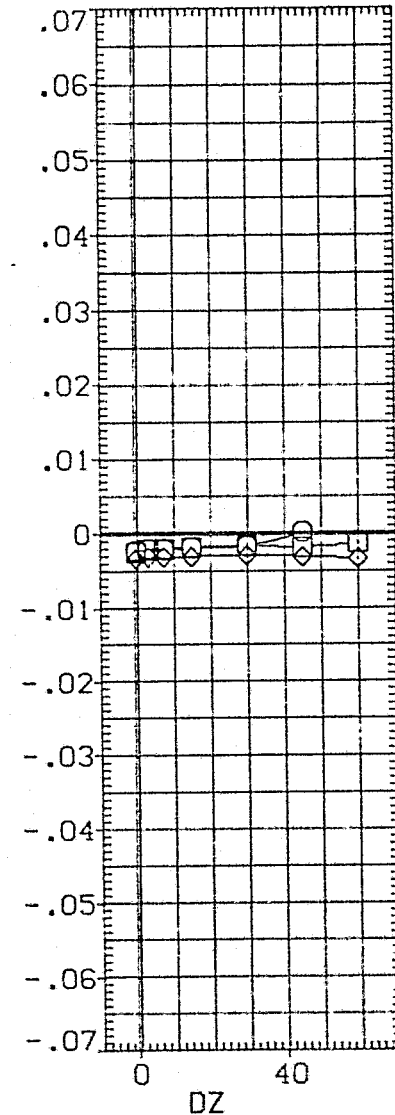
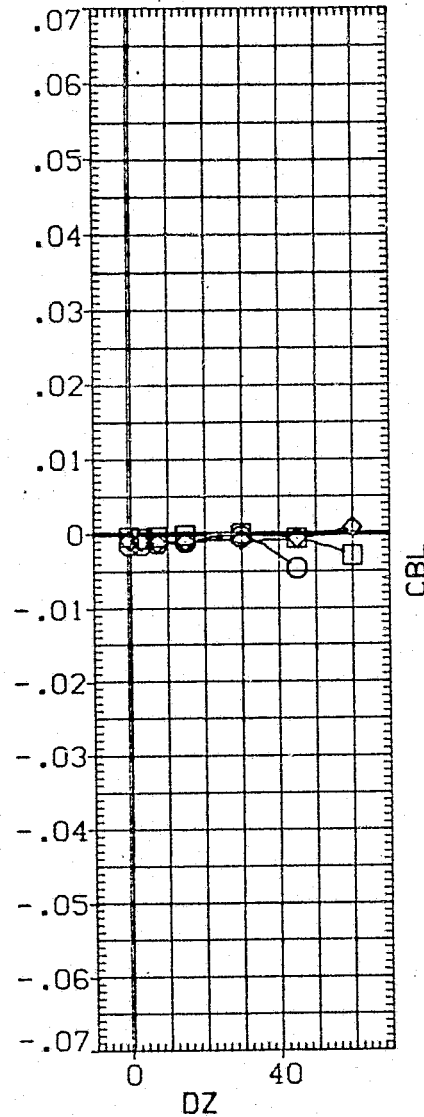
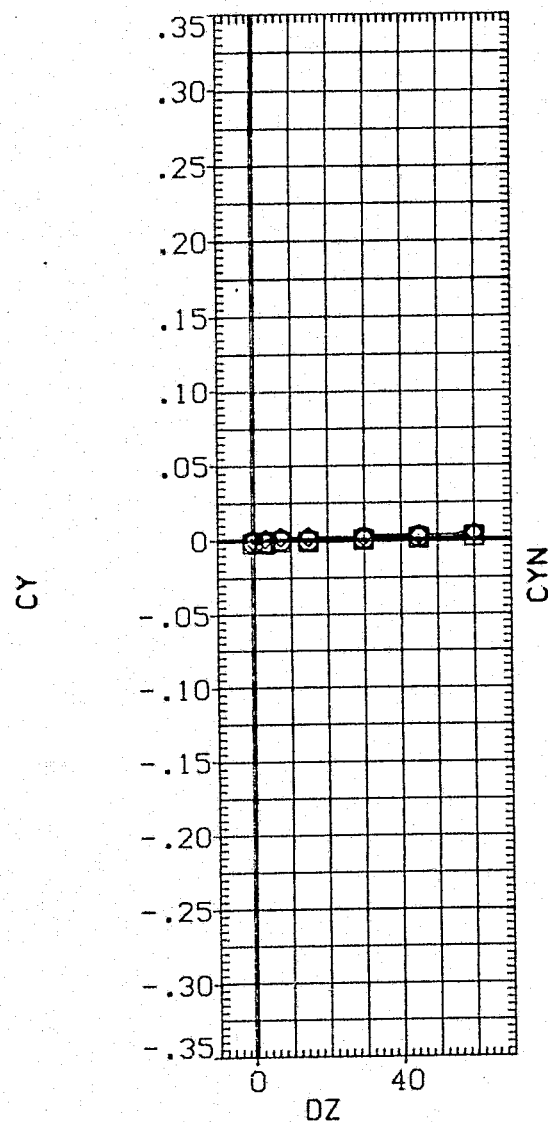


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	6.000	ALPHAC	.000	BETAC	.000
□	10.000	ELV-1B	.000	ELV-0B	3.000
◇	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

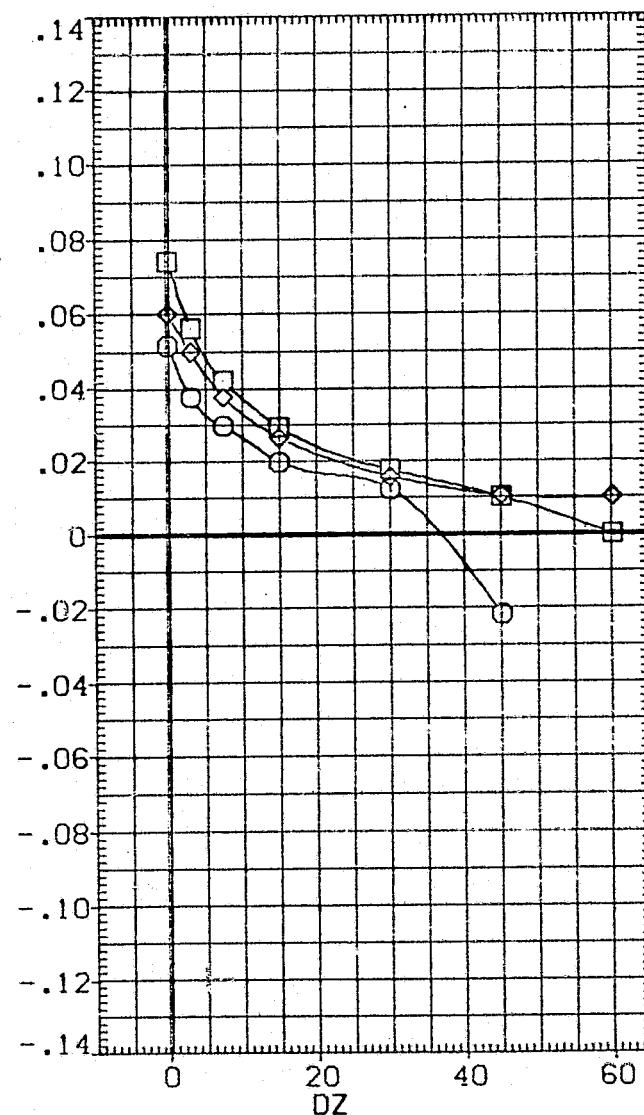
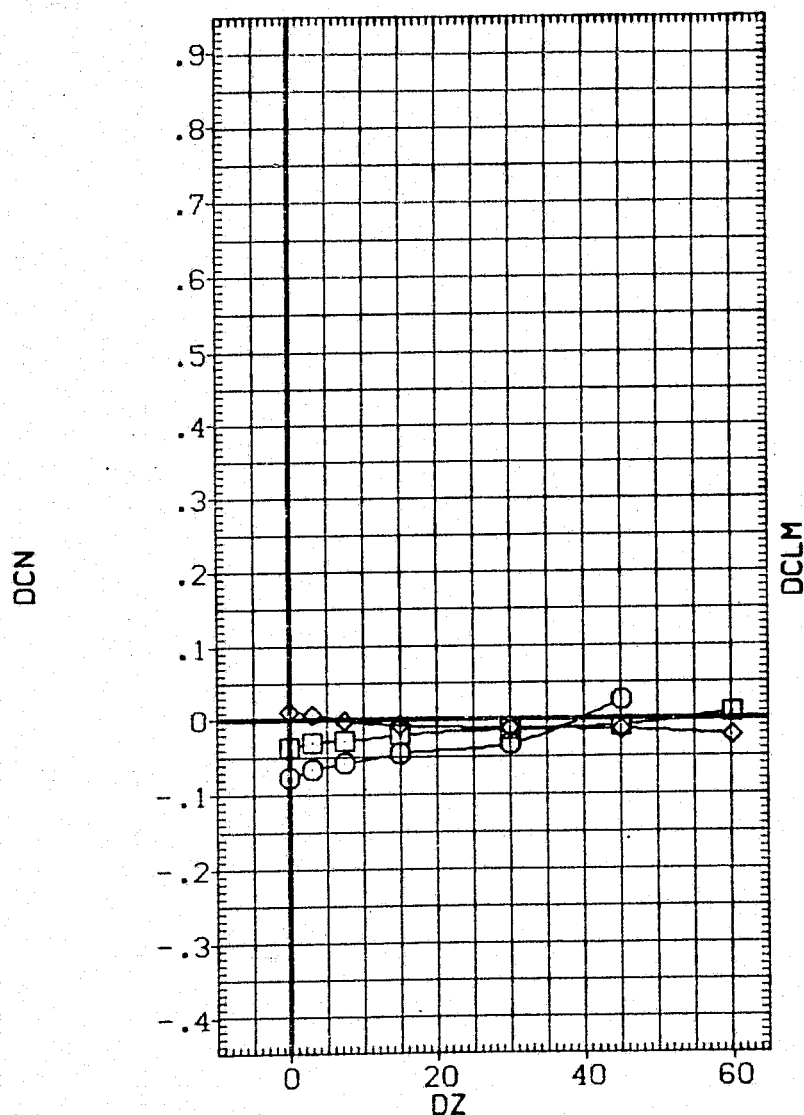


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (049 - 010)(4GN049)

SYMBOL

○
□
◇

ALPHA0

6.000

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

50.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

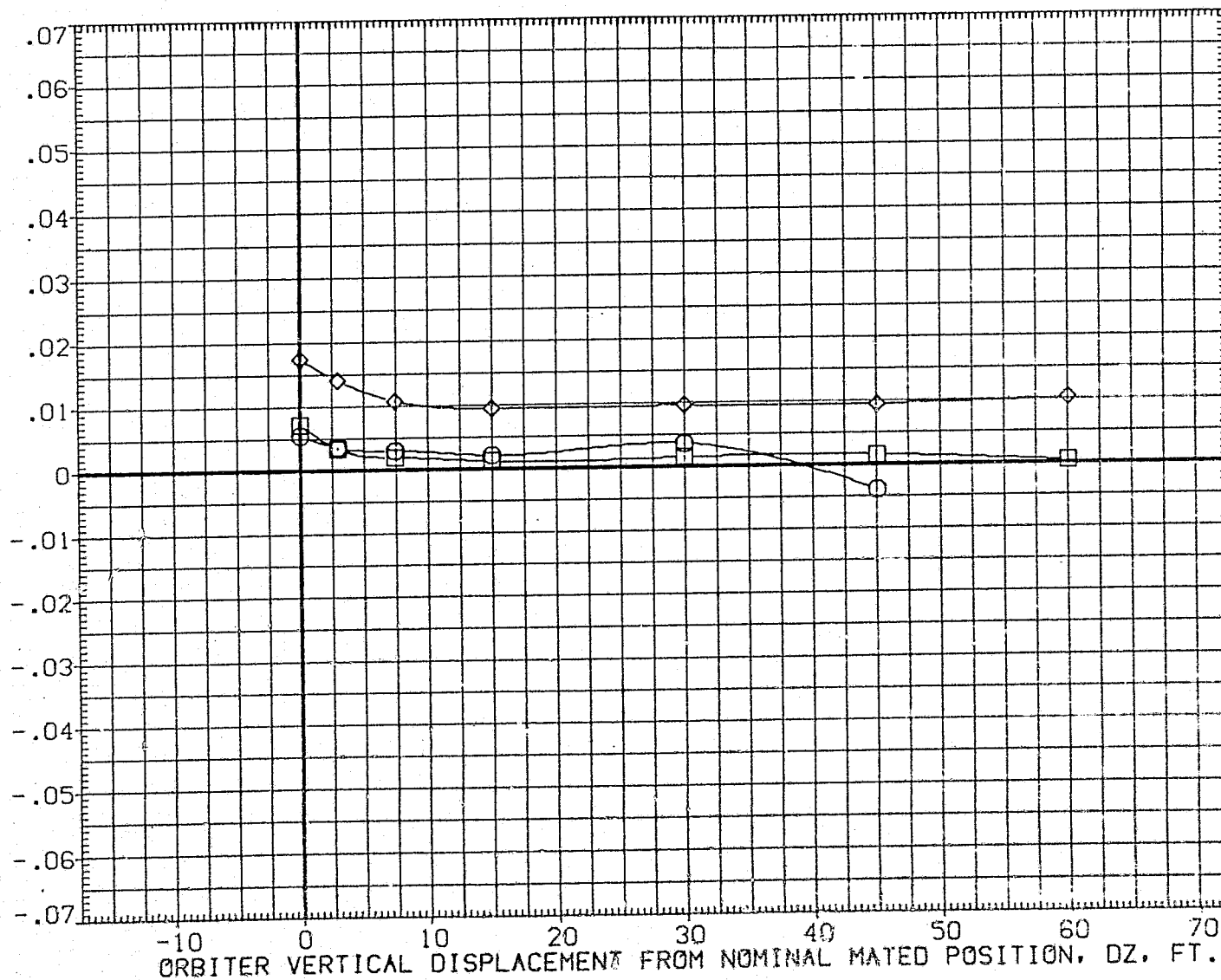


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0

6.000

10.000

14.000

ALPHA0

ALPHA0

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

.000

.000

5.000

.000

.000

BETAC

ELV-OB

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

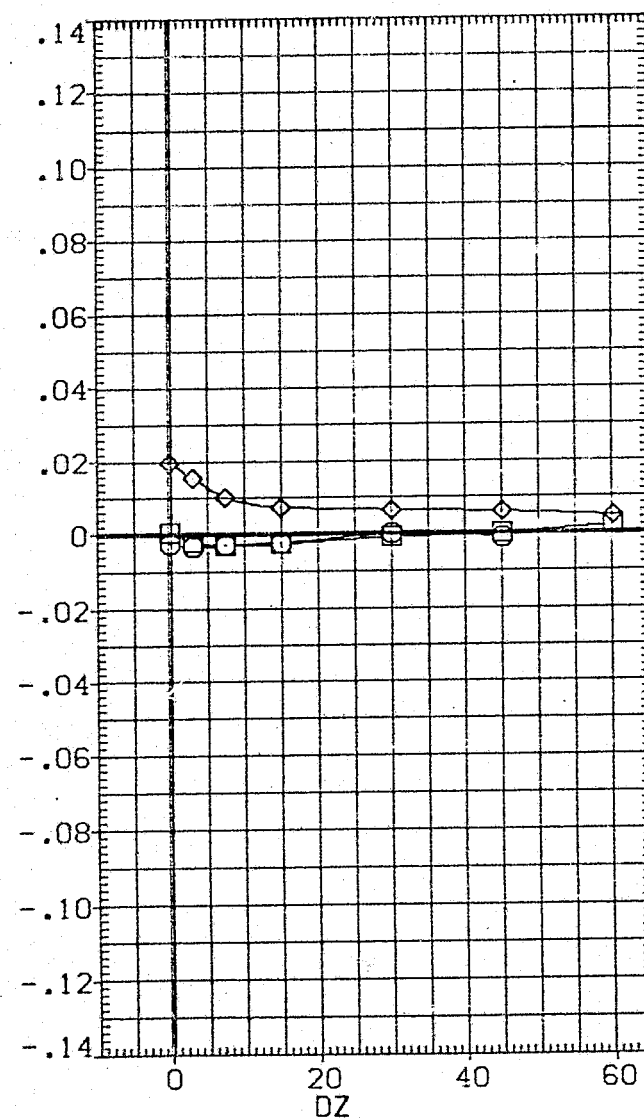
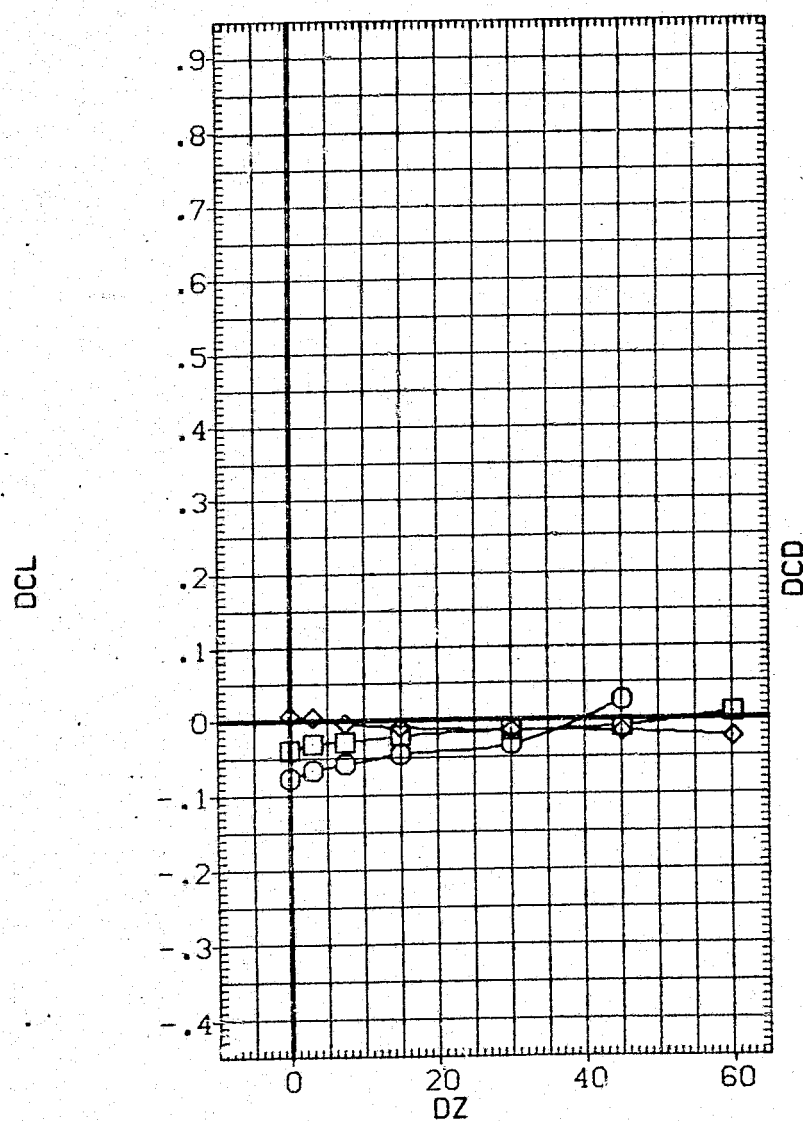


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN052)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	6.000	ELEVON	.000	MACH	3.000
□	10.000	BETA0	5.000	BETAC	.600
◇	14.000	PHI	.000	DY	.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

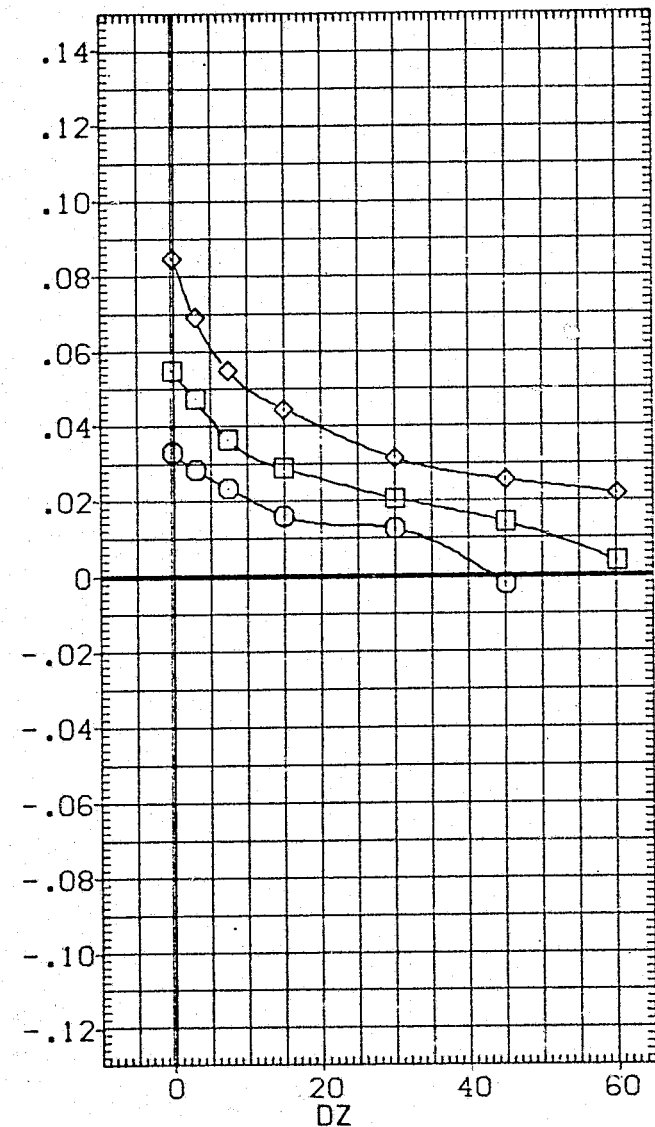
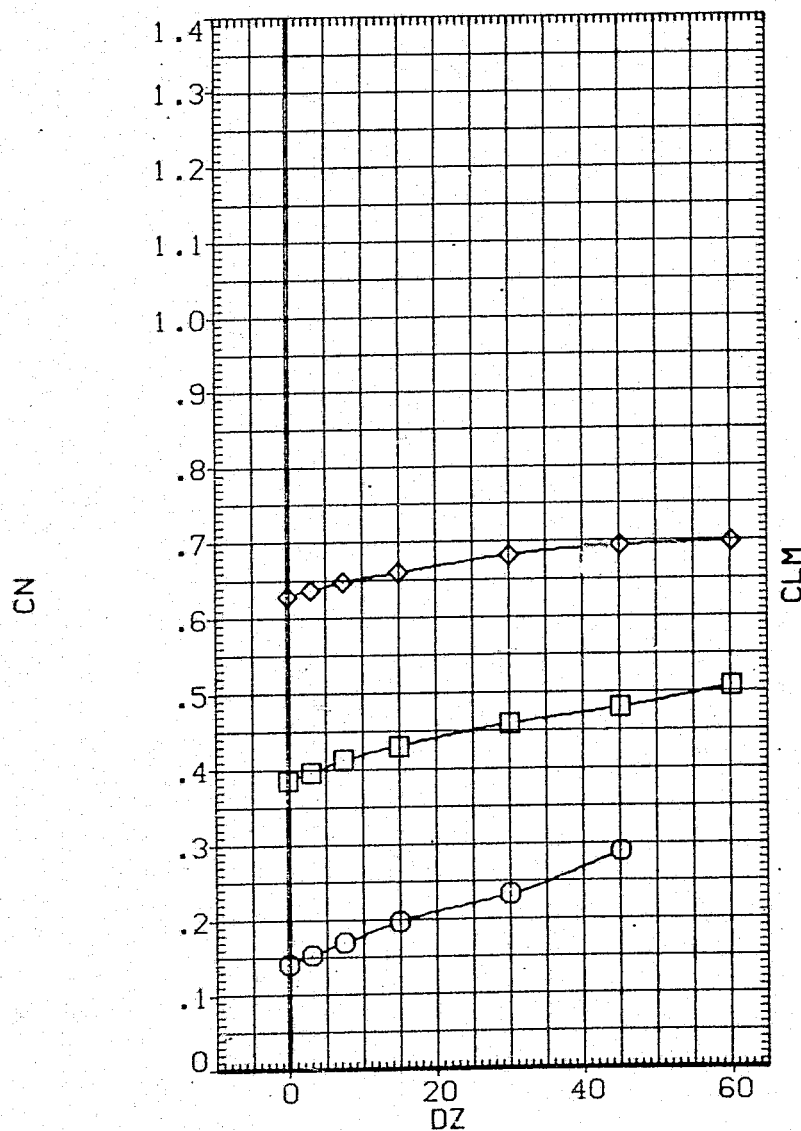


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ELV-1B .000 ELV-0B 3.000
□	10.000	ELEVON 5.000 MACH .600
◇	14.000	BETA0 .000 BETAC .000
		PHI .000 DY .000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

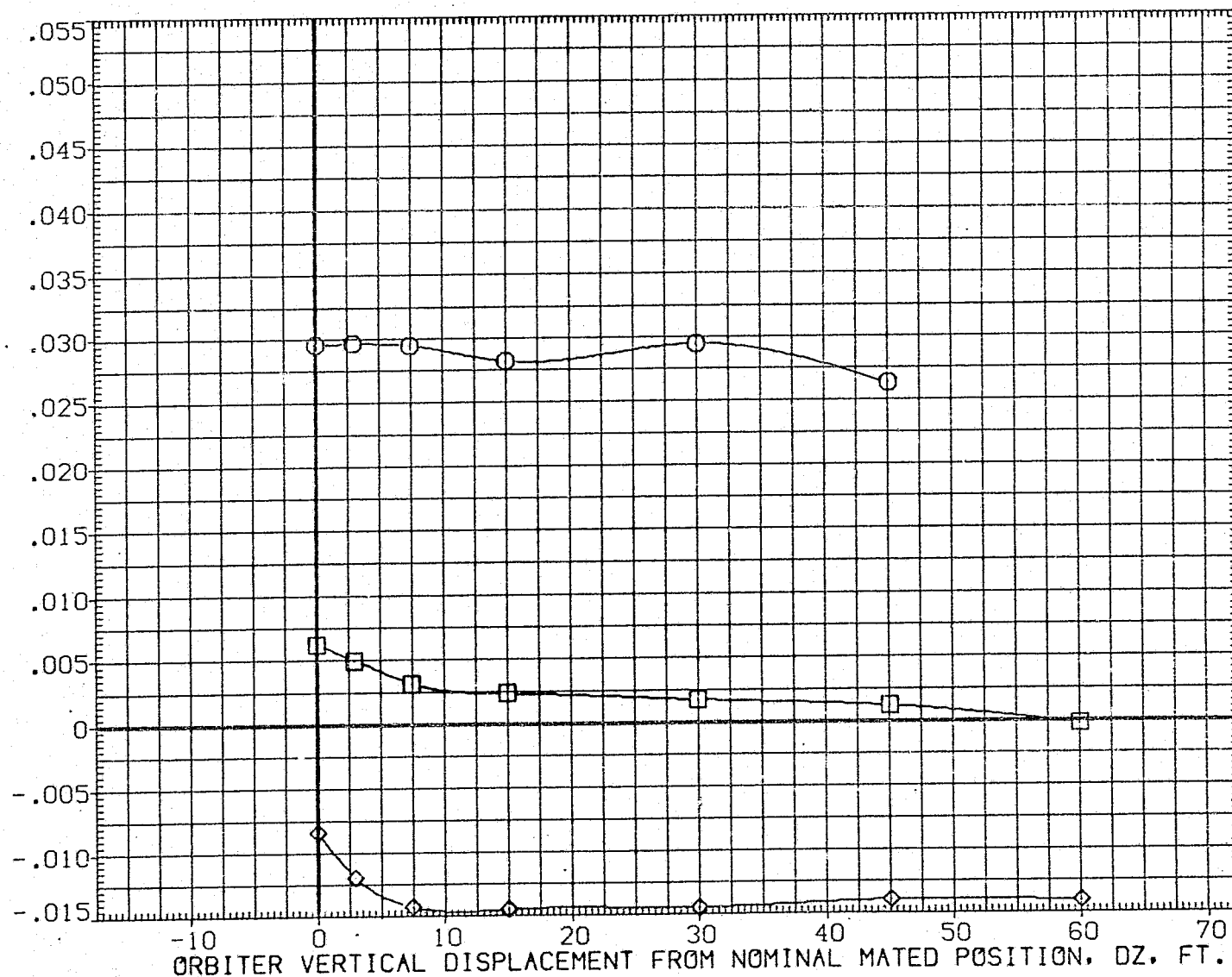


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(26N052)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ELV-IB .000 ELV-OB 3.000
□	10.000	ELEVON 5.000 MACH .600
◇	14.000	BETA0 .000 BETAC .000
		PHI .000 DY .000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

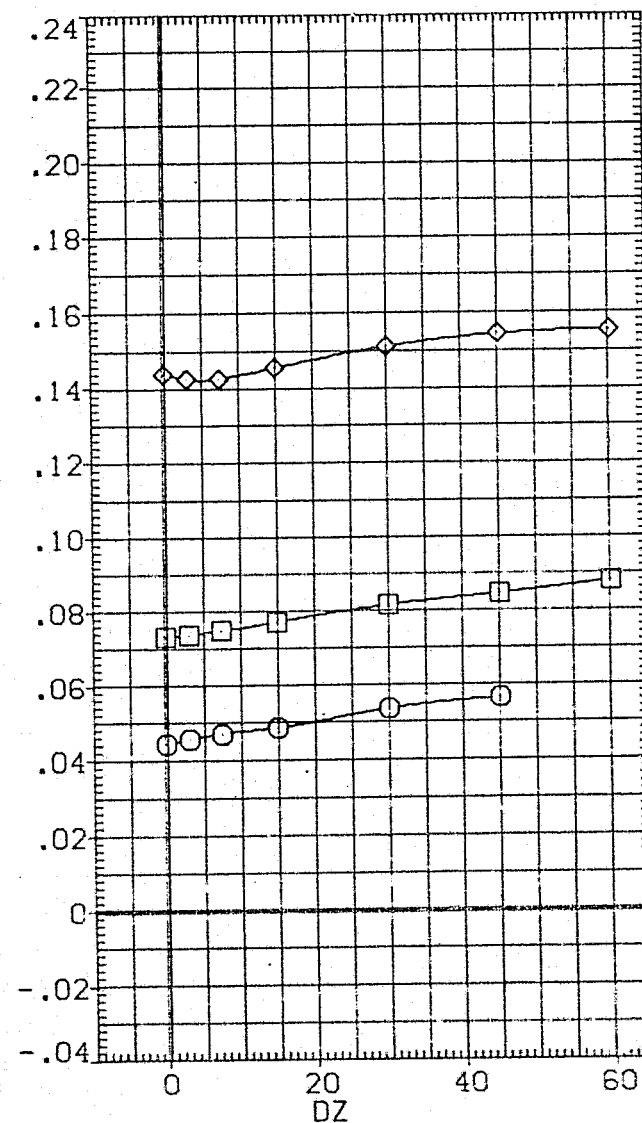
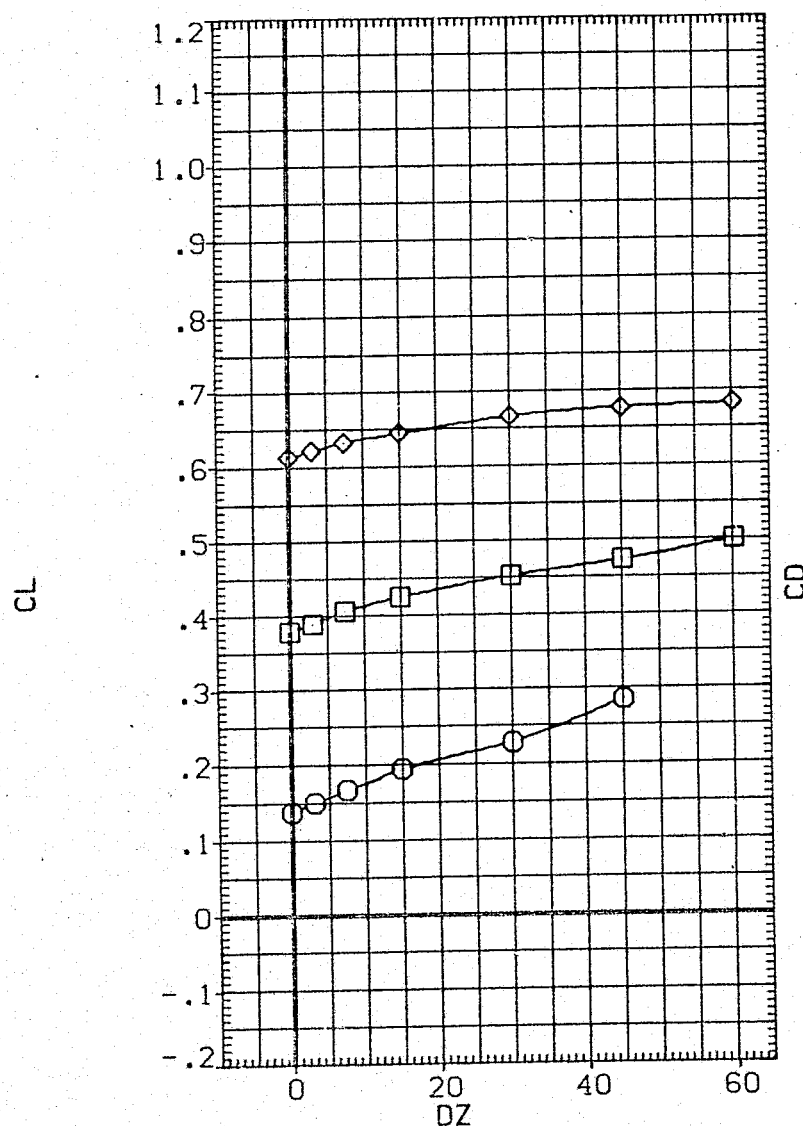


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(26N052)

SYMBOL		PARAMETRIC VALUES				
○	ALPHA0	6.000	ELV-1B	.000	ELV-0B	3.000
□	10.000	ELEVON	5.000	MACH	.600	
◇	14.000	BETA0	.000	BETAC	.000	
		PHI	.000	DY	.000	
		DX	.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

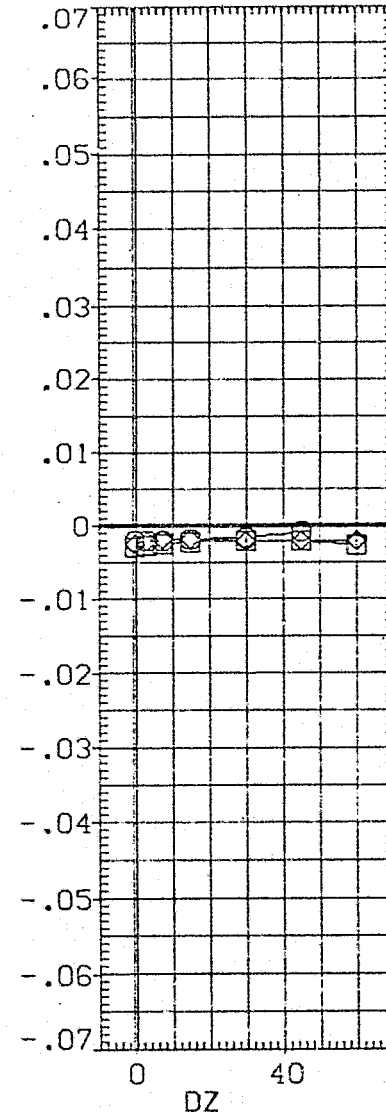
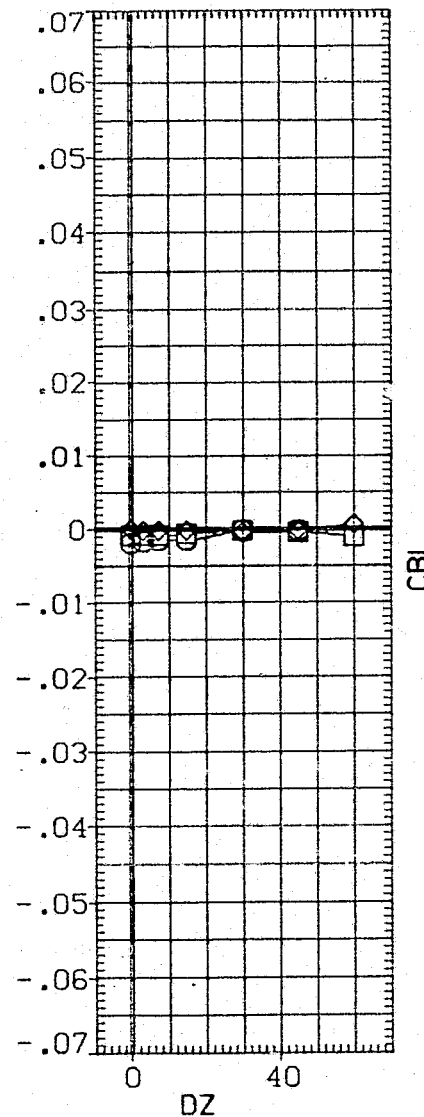
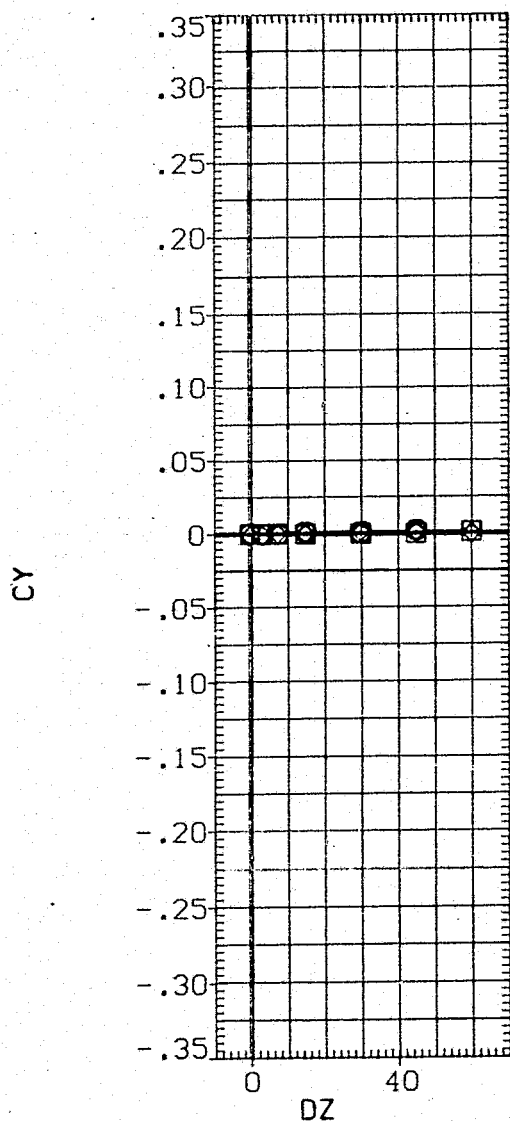


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (052 - 010)(46N052)

SYMBOL

○
□
◇

ALPHA0

6.000
10.000
14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

BETAC

.000

ELV-08

5.000

MACH

.000

DX

.000

BETA0

.000

.000

3.000

.600

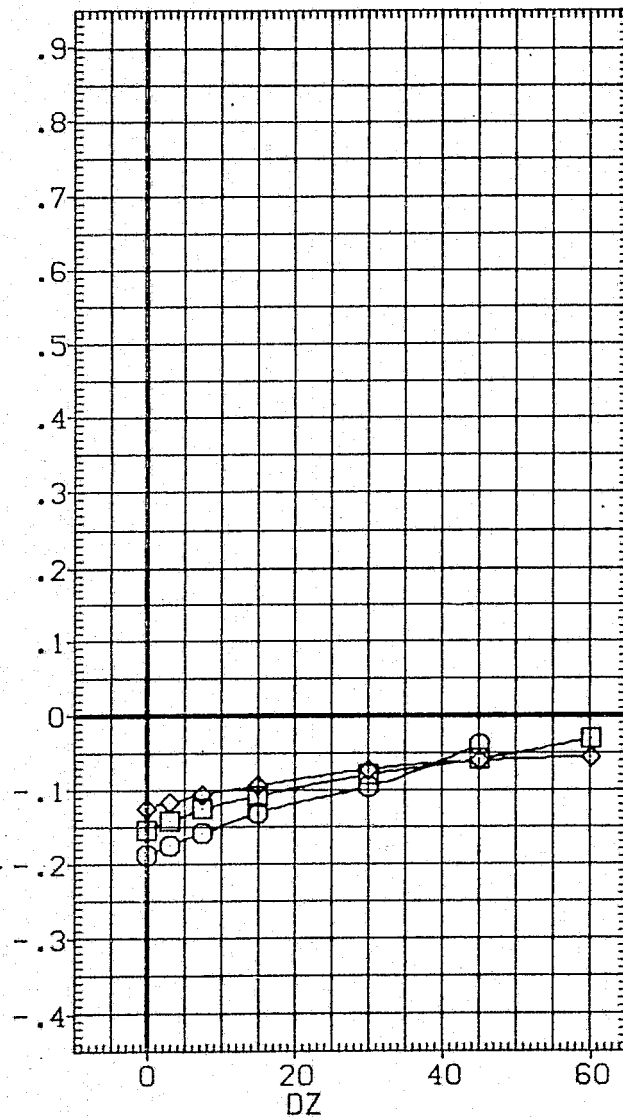
.000

.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

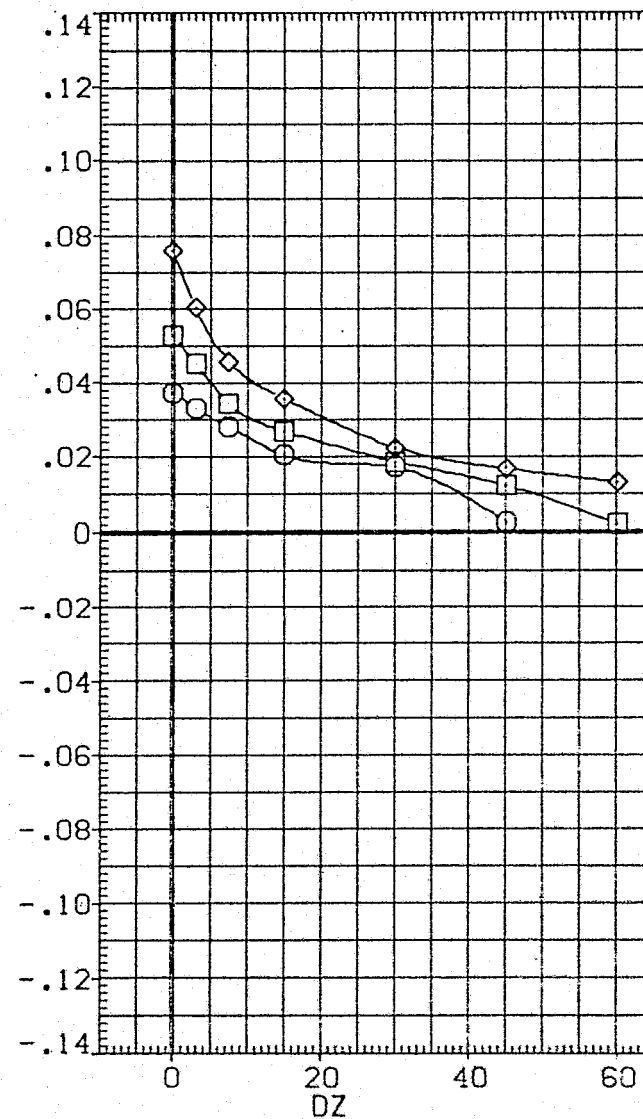


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 4.000 BETAC .000
□	10.000	ELV-18 .000 ELV-08 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

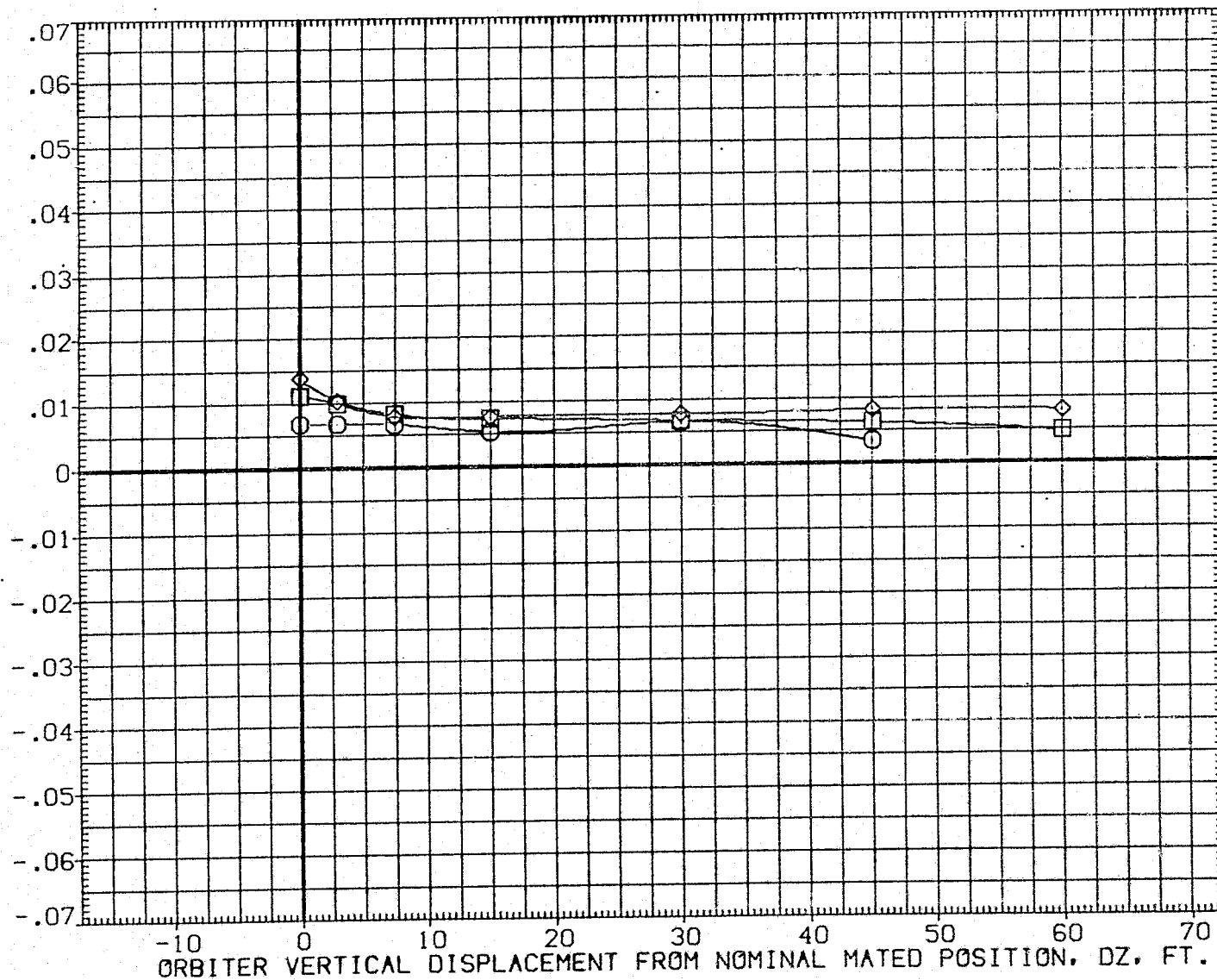


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (052 - 010) (4GN052)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 4.000 BETAC .000
□	10.000	ELV-1B .000 ELV-0B 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY .000 BETA0 .000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

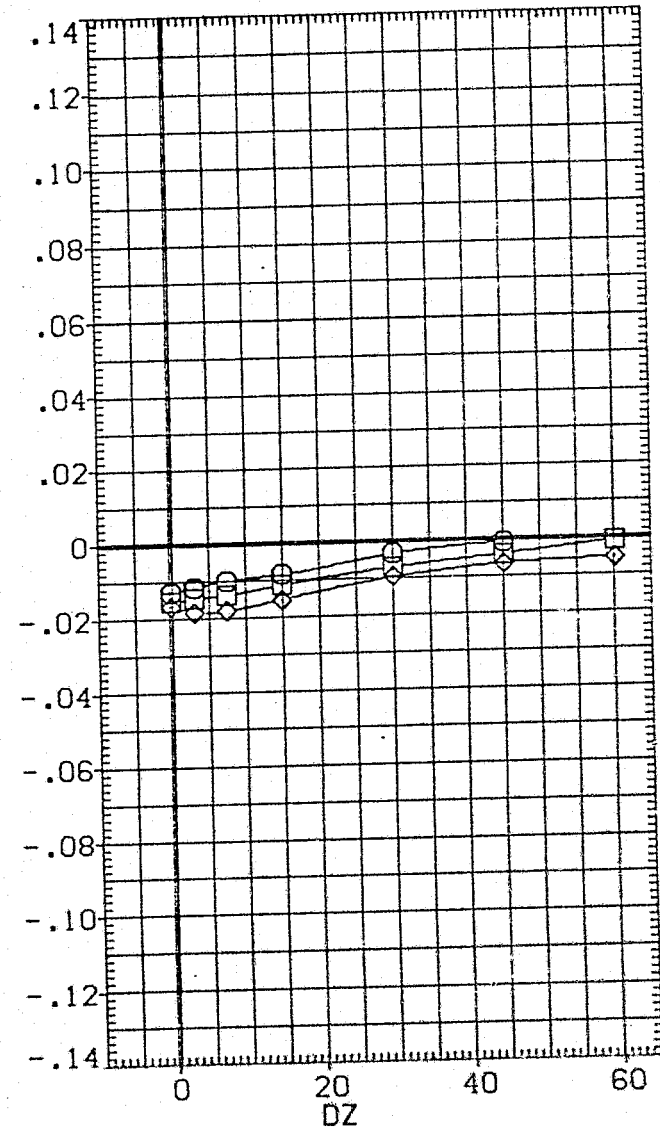
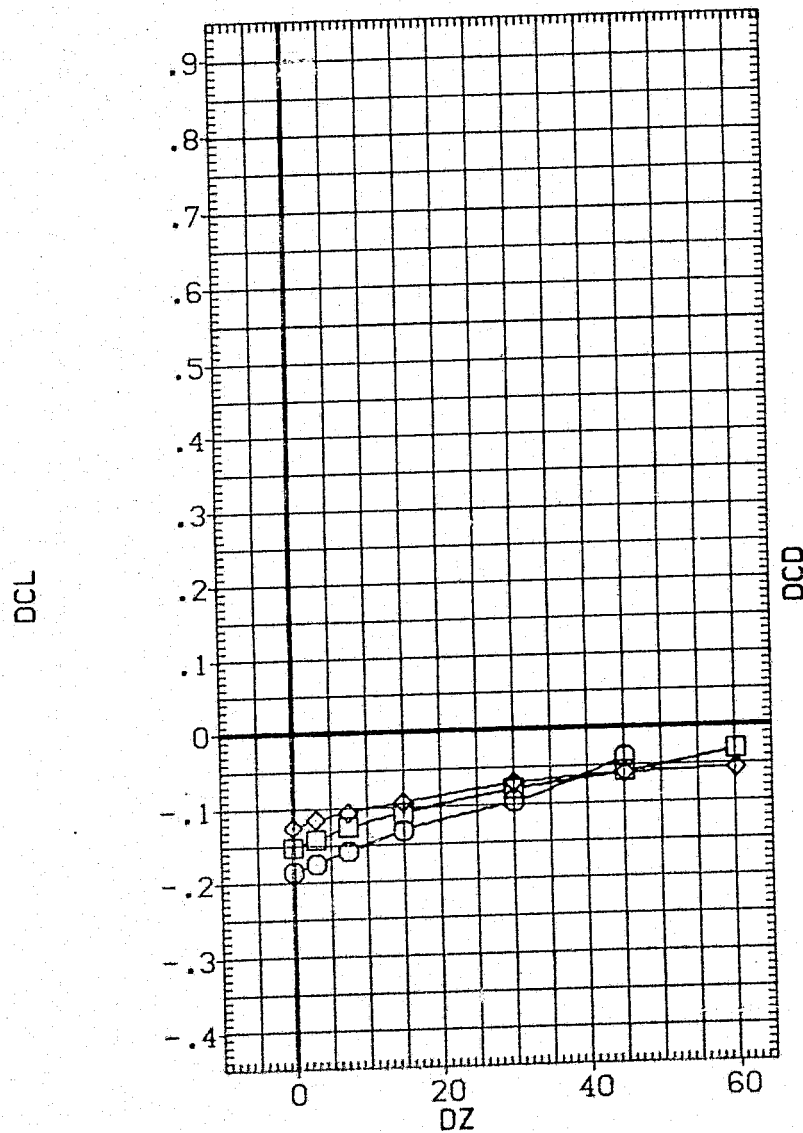


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN055)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	6.000	.000		3.000	
□	10.000	5.000		.600	
◇	14.000	.000		.000	
		BETA0		BETAC	
		.000		.000	
		PHI		DY	
		.000		.000	
		DX		ALPHAC	
		.000		8.000	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

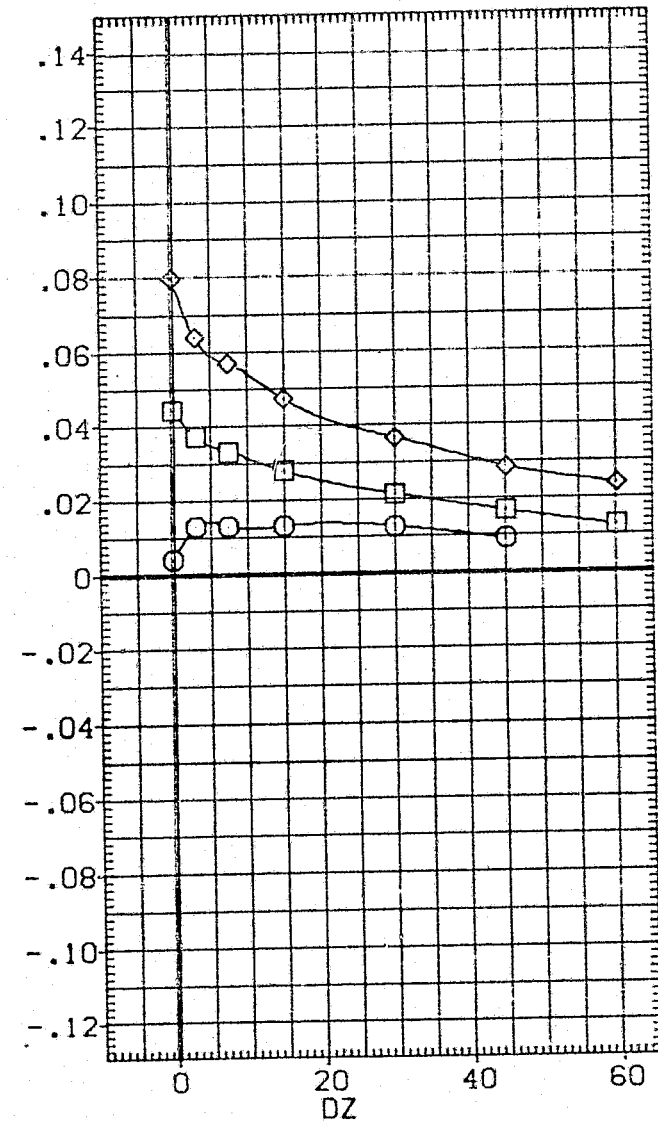
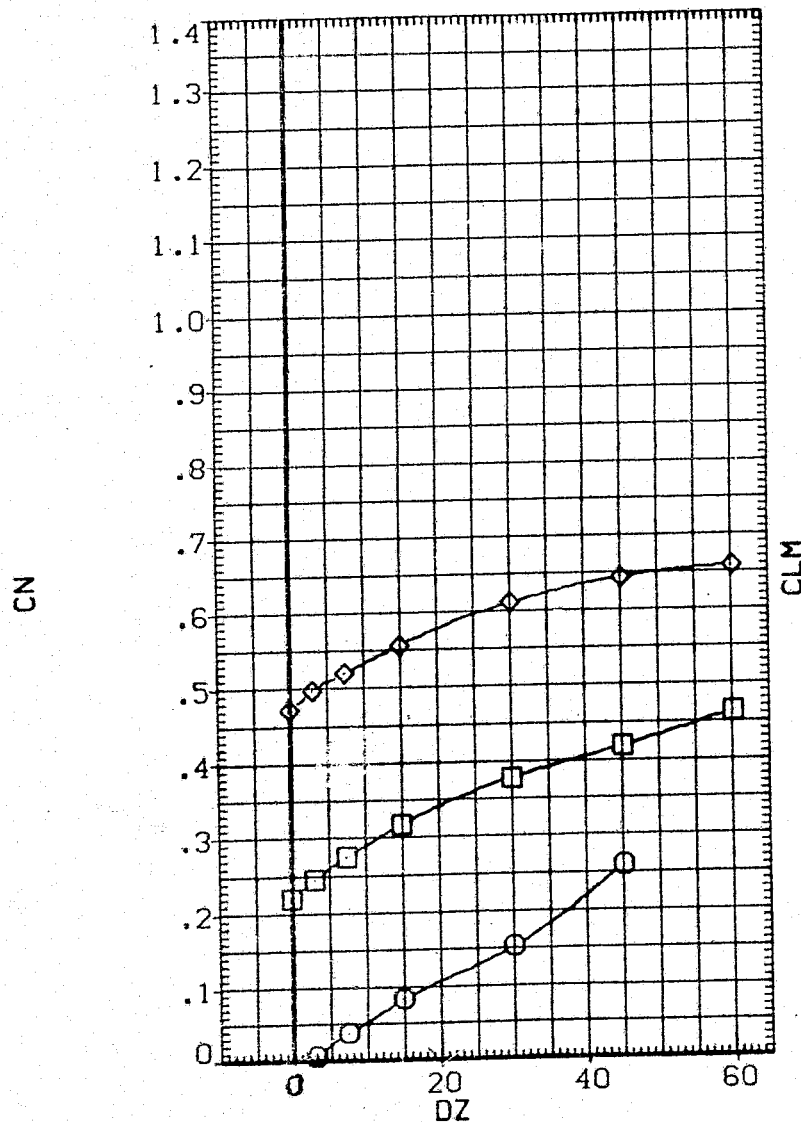


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN055)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ELV-IB .000 ELV-OB 3.000
□	10.000	ELEVON 5.000 MACH .600
◇	14.000	BETA0 .000 BETAC .000
		PHI .000 DY .000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

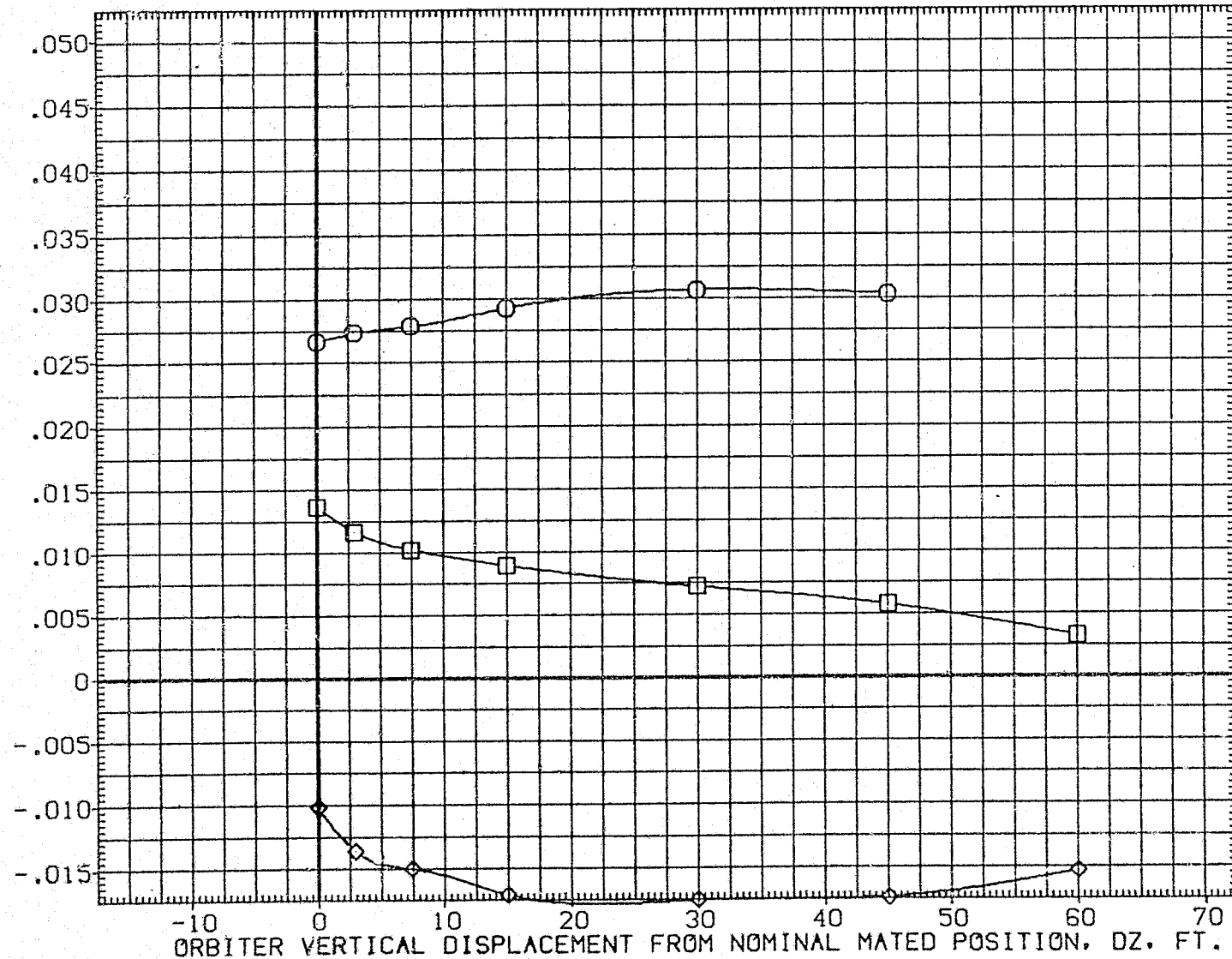


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	6.000		.000	3.000	
□	10.000	ELEVON	5.000	MACH	.600
◇	14.000	BETA0	.000	BETAC	.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

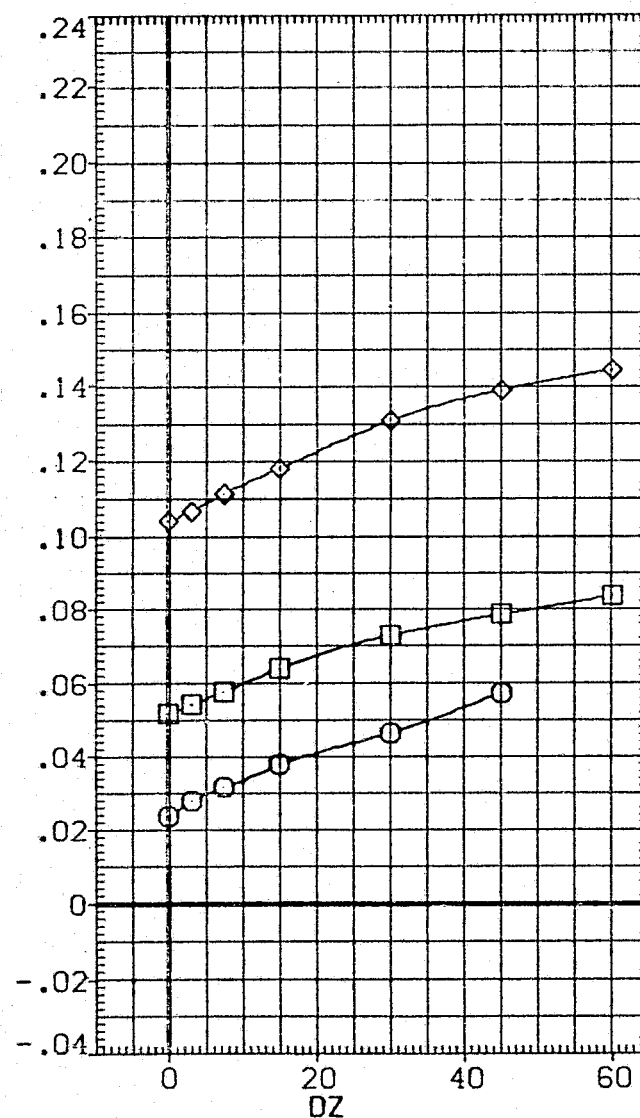
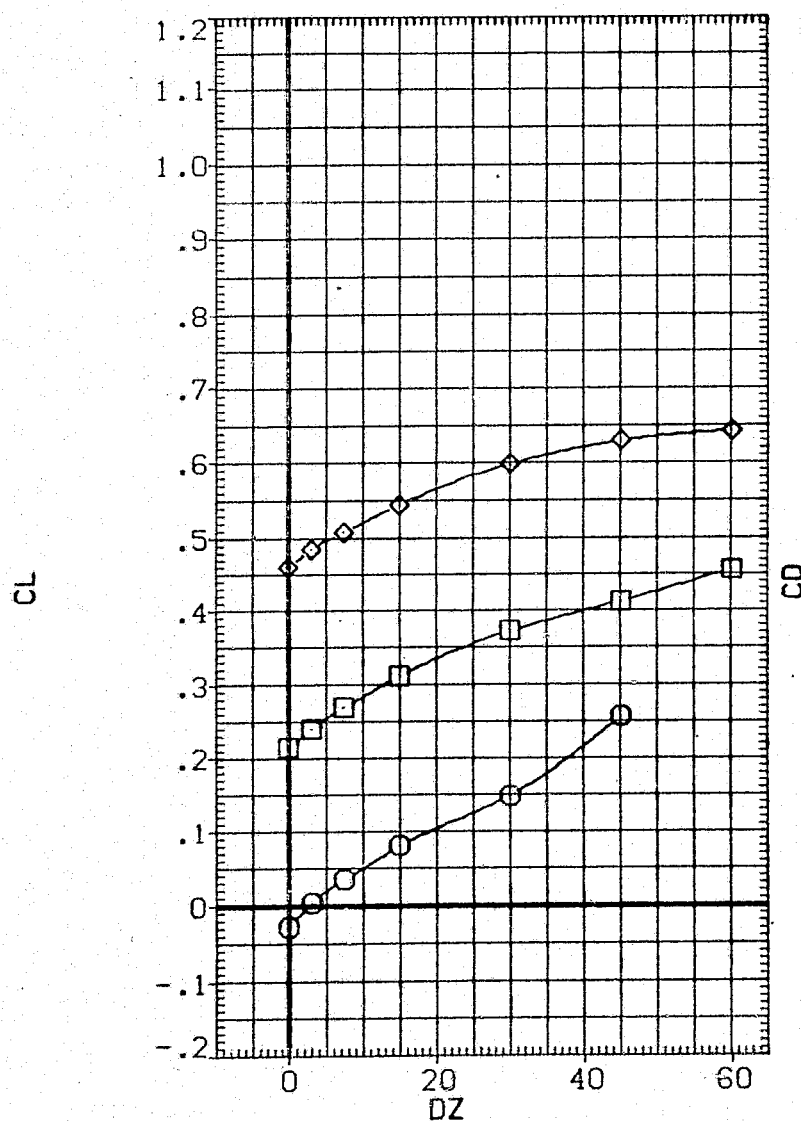


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN055)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB
○	6.000	.000	MACH	3.000
□	10.000	5.000	BETAC	.600
◇	14.000	.000	DY	.000
		.000	ALPHAC	8.000
		.000		

REFERENCE INFORMATION

SREF	2690.0000	59.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

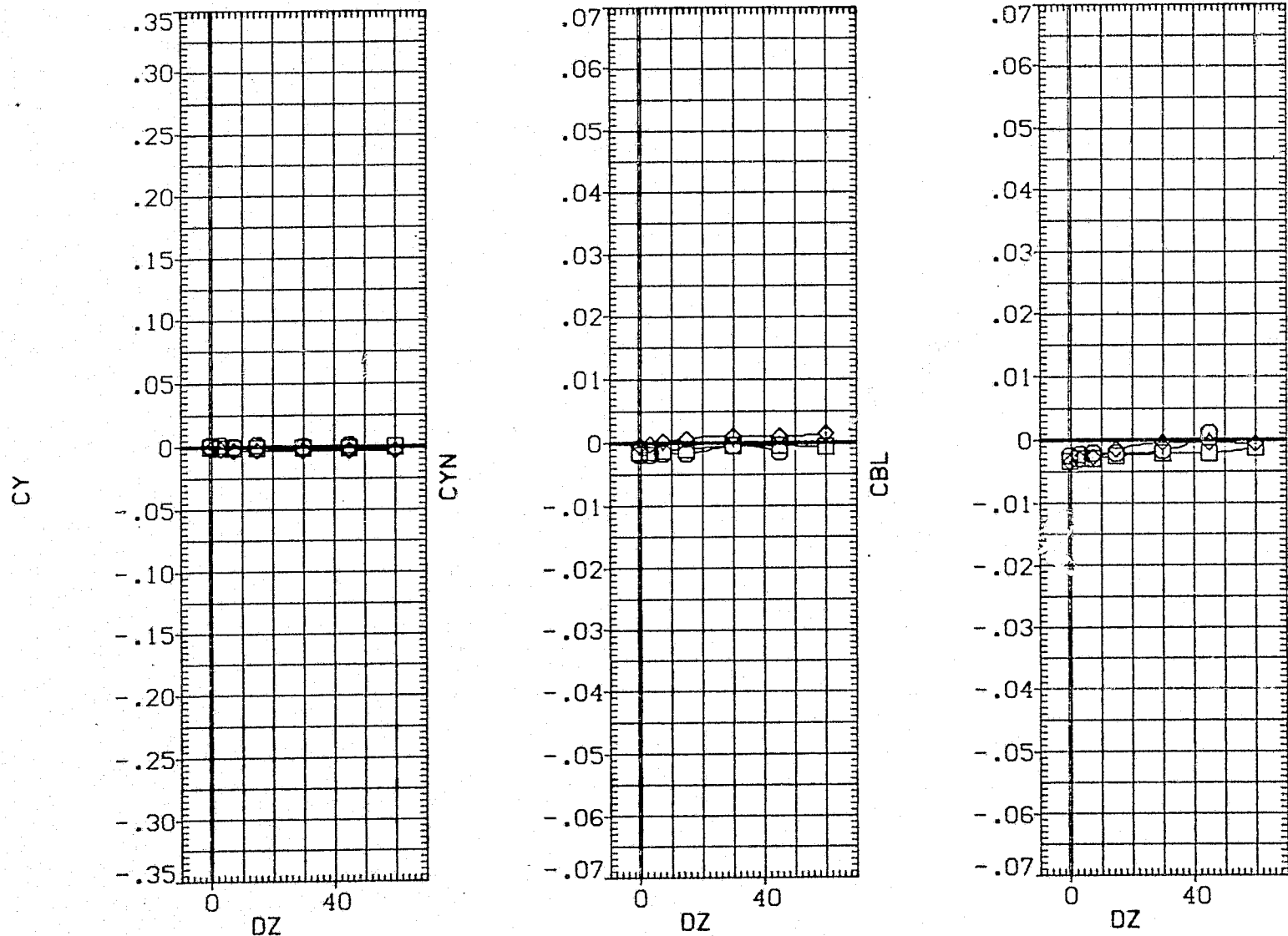


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (055 - 010) (4GN055)

SYMBOL

○
□
◇

ALPHA0

6.000

ALPHAC

10.000

14.000

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

.000

ELV-08

5.000

MACH

.000

DX

.000

BETA0

.000

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000

50.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

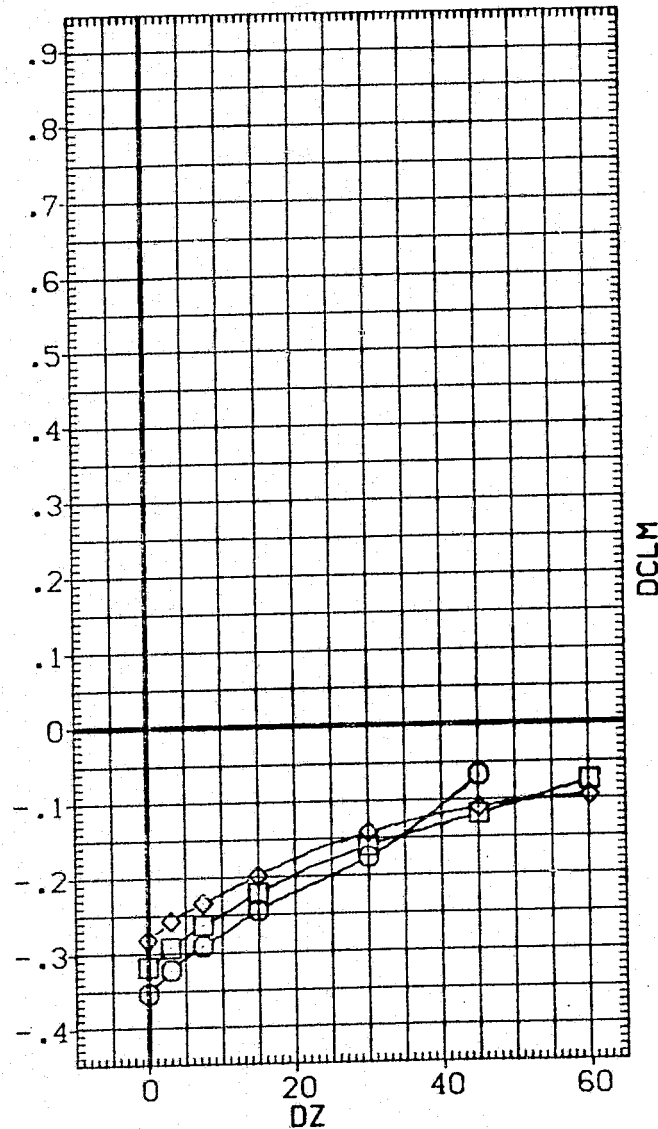
IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

DCN



DCLM

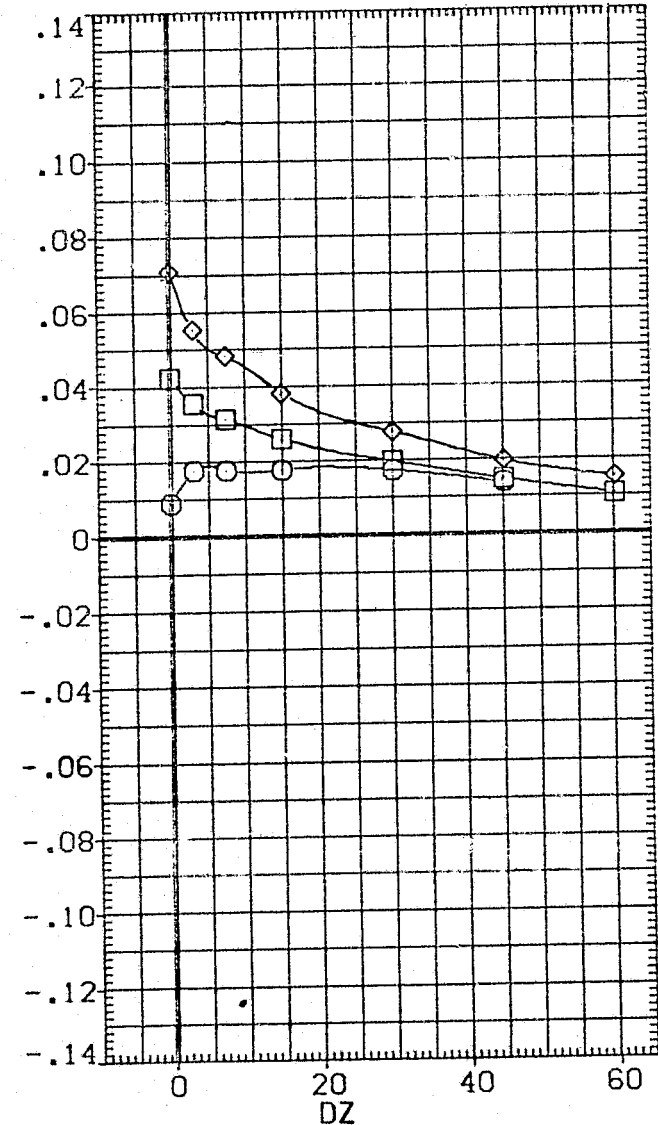


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (055 - 010)(4GN055)

SYMBOL

○
□
◇

ALPHA0

6.000

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

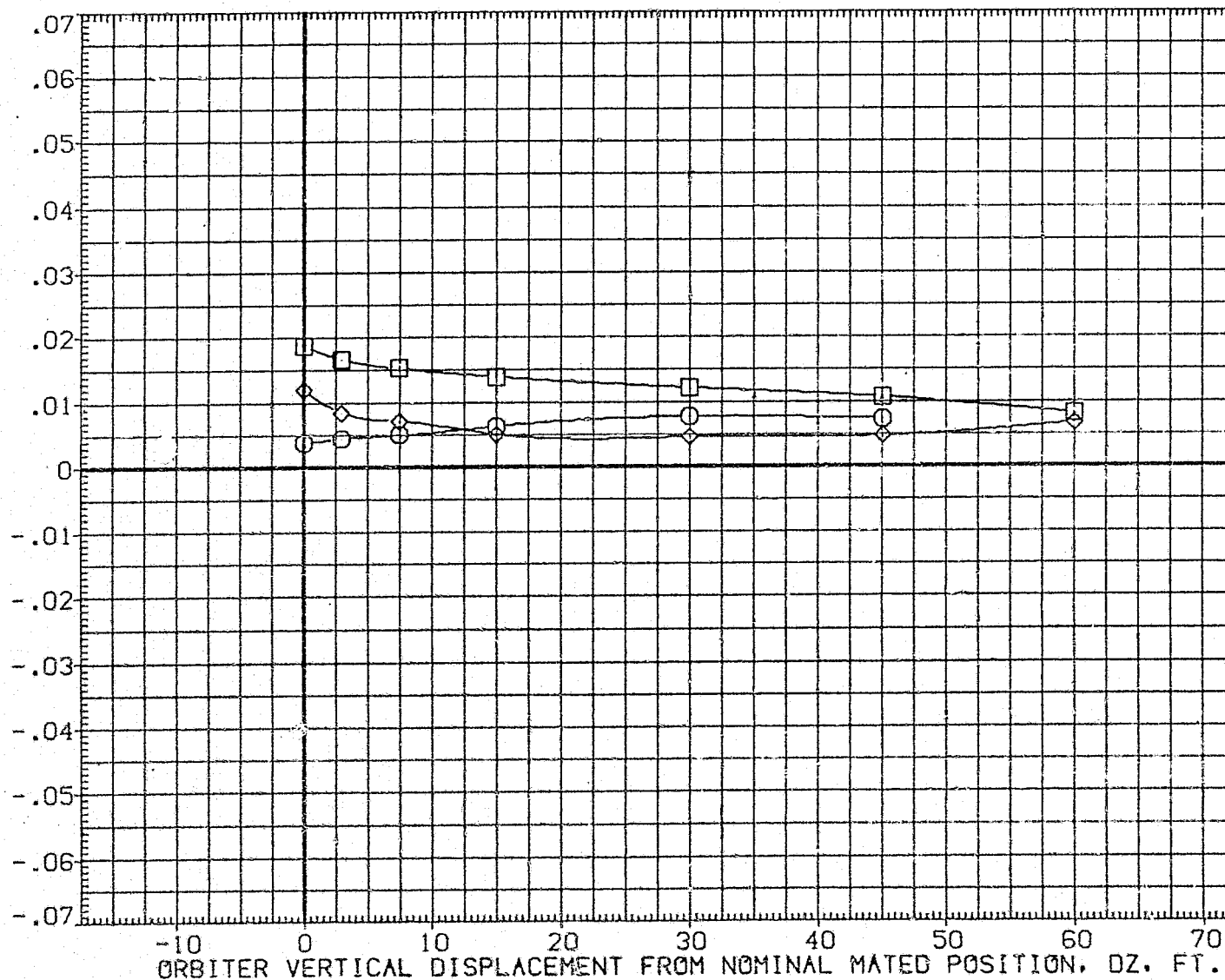


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 8.000 BETAC .000
□	10.000	ELV-1B .000 ELV-0B 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

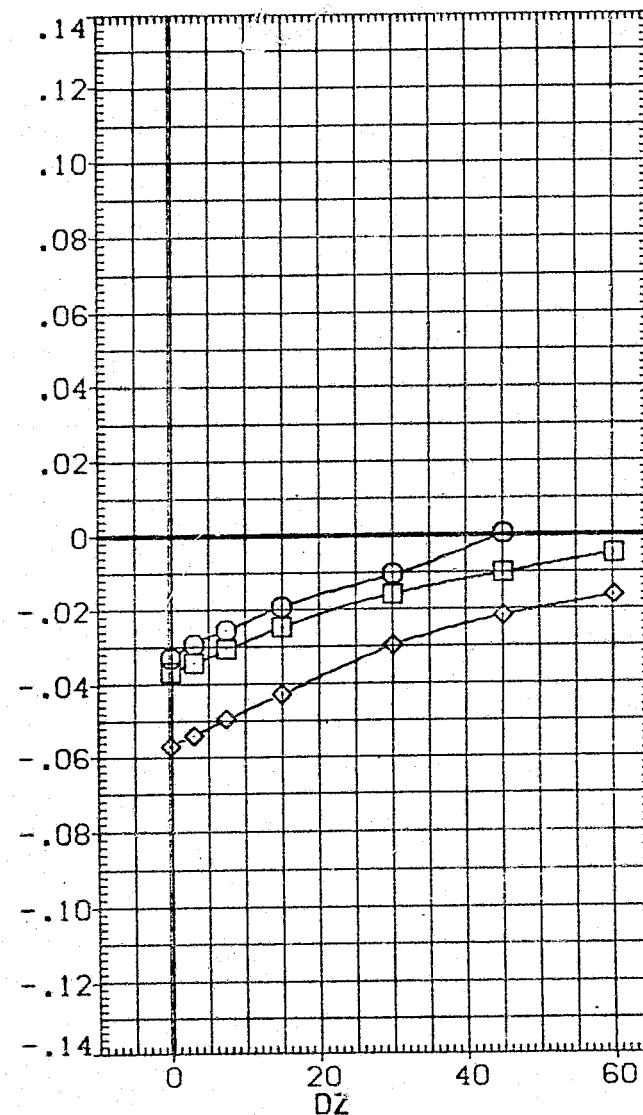
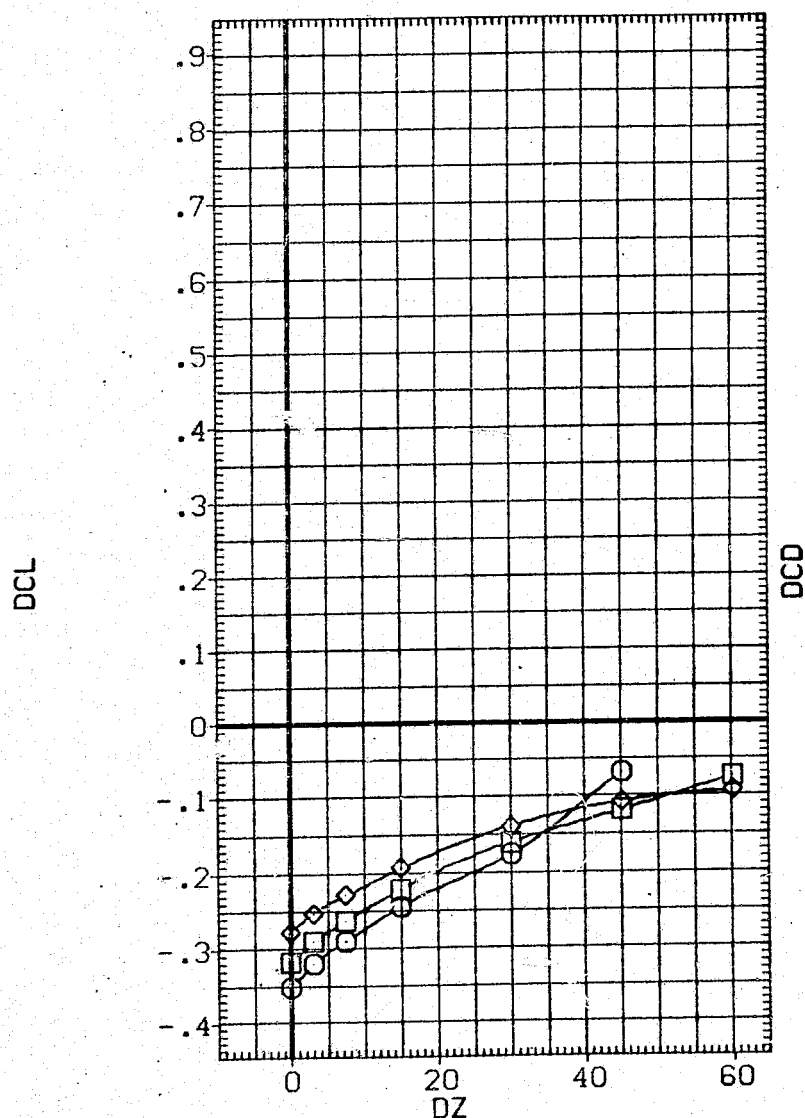


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN050)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	6.000	BETAC	.000	ELV-1B	.000
□	10.000	ELV-0B	3.000	ELEVON	5.000
◇	14.000	MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		ALPHAC	.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

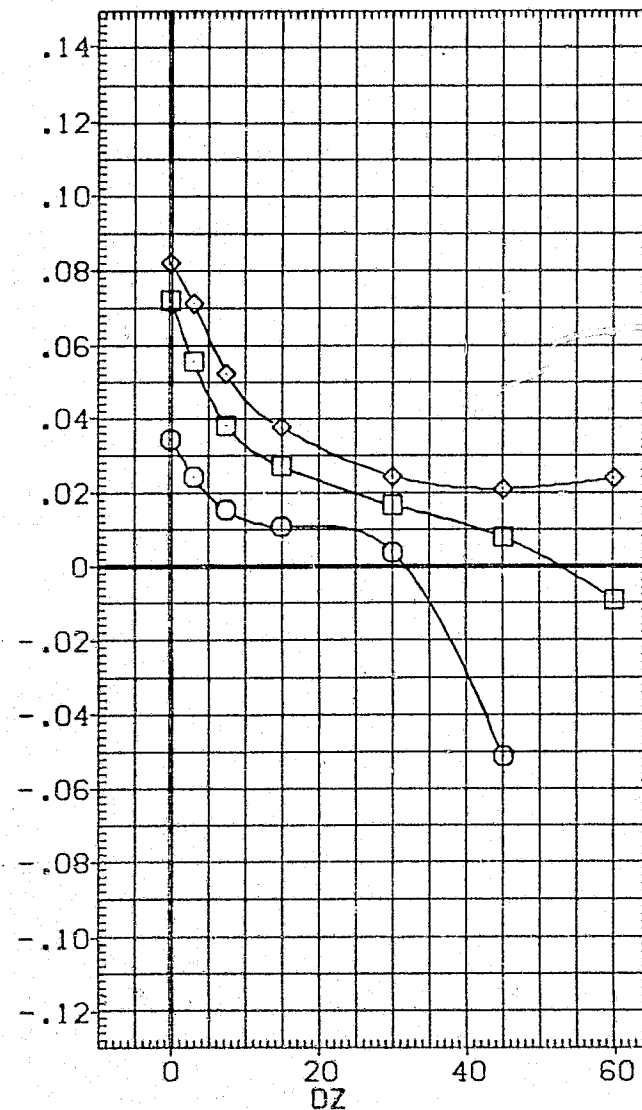
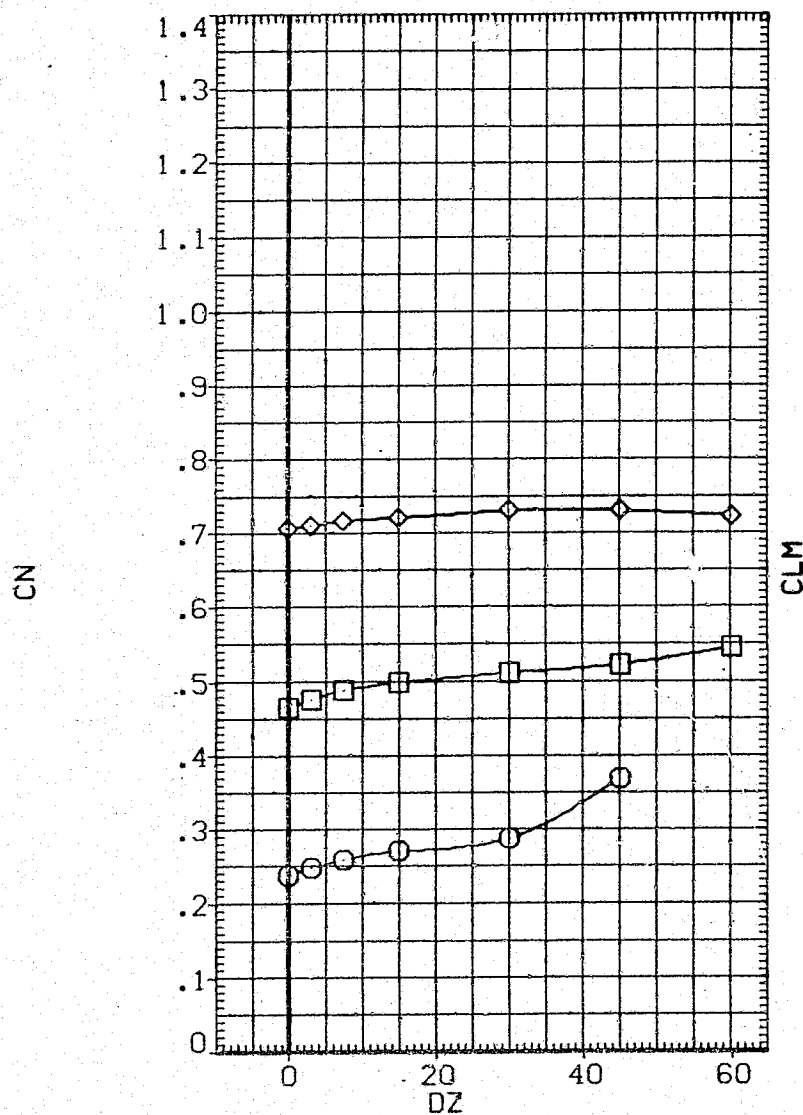


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	ELV-OB	ELV-IB	ELVON	BETA0	DY	DX
○	6.000	.000	.000	.000	5.000	.000	.000	.000
□	10.000	.000	3.000	.000	.000	.000	.000	.000
◇	14.000	.000	.600	.000	.000	.000	.000	.000
		PHI	.000	DY	.000	.000	.000	.000
		ALPHAC	.000	DX	10.000	.000	.000	.000

REFERENCE INFORMATION	
SREF	2690.0000
LREF	474.8100
BREF	936.6800
XMRP	1109.0000
YMRP	.0000
ZMRP	375.0000
SCALE	.0300
SD, FT.	IN.
	IN.
	IN. X0
	IN. Y0
	IN. Z0

AXIAL FORCE COEFFICIENT, CA

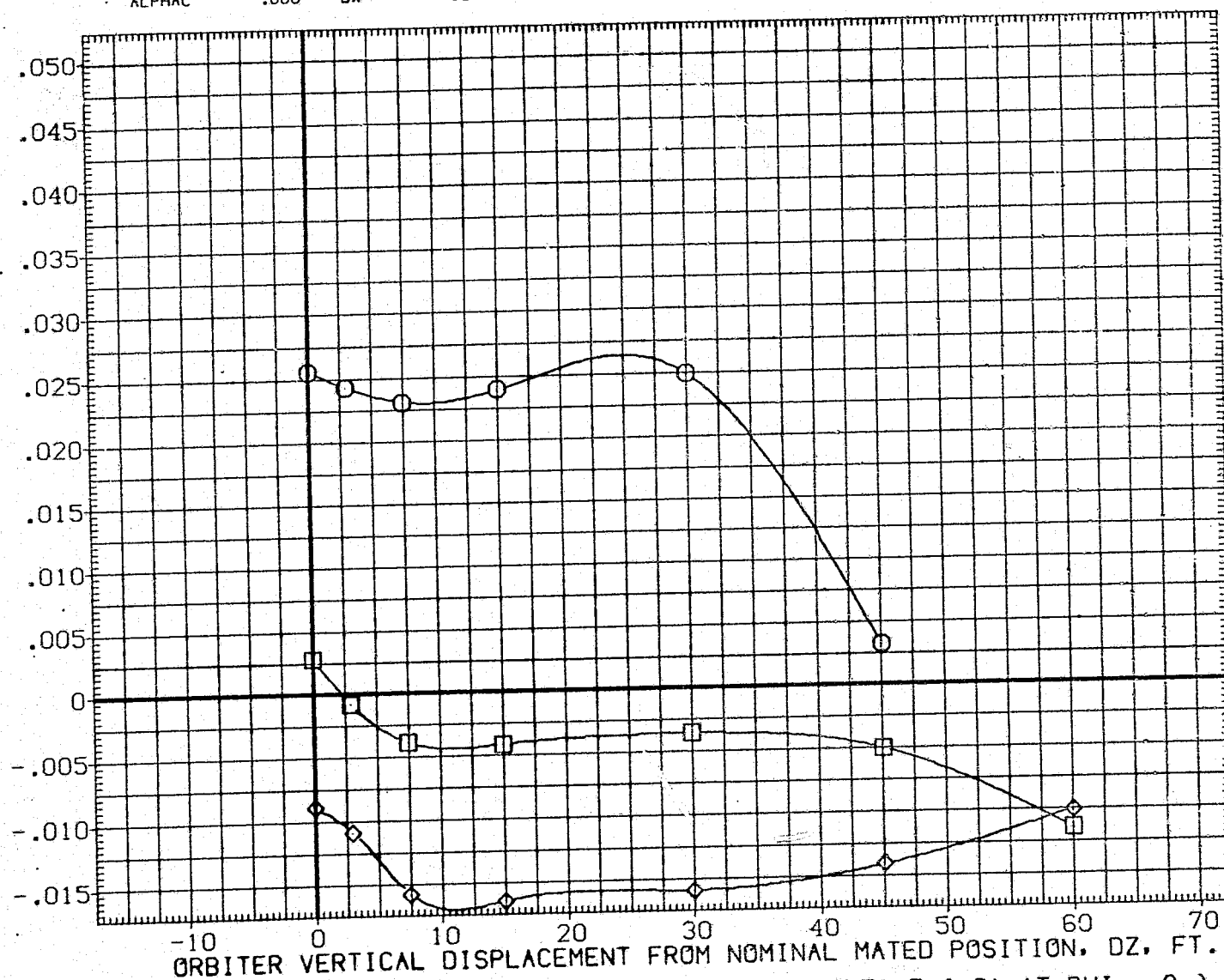


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN050)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-IB	
○	6.000	BETAC	.000	ELV-IB	.000
□	10.000	ELV-0B	3.000	ELEVON	5.000
◇	14.000	MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		ALPHAC	.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.3100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

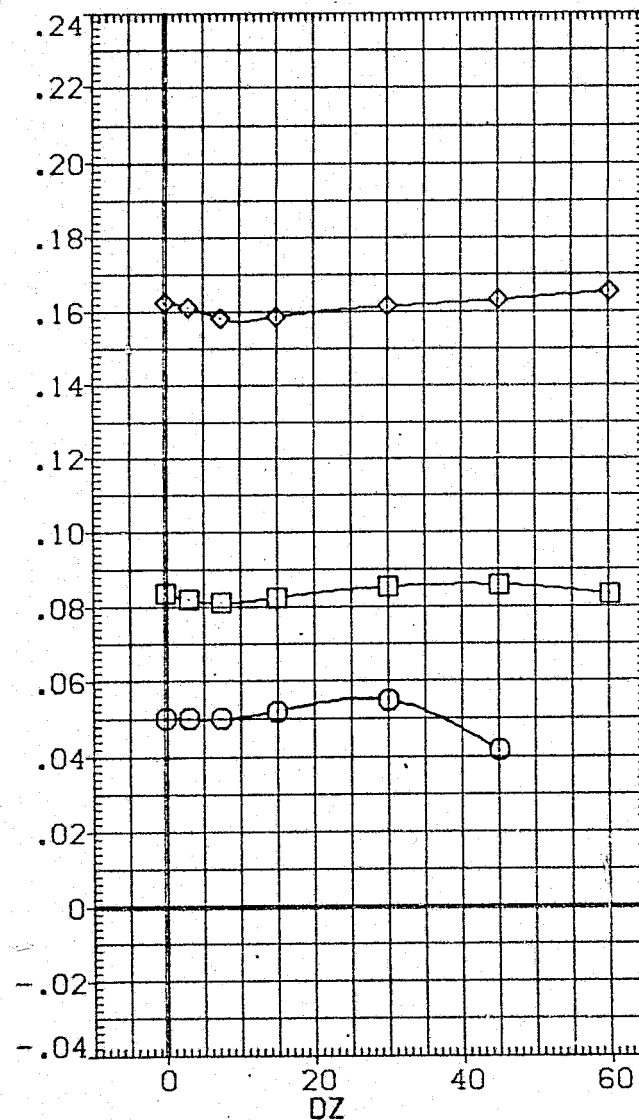
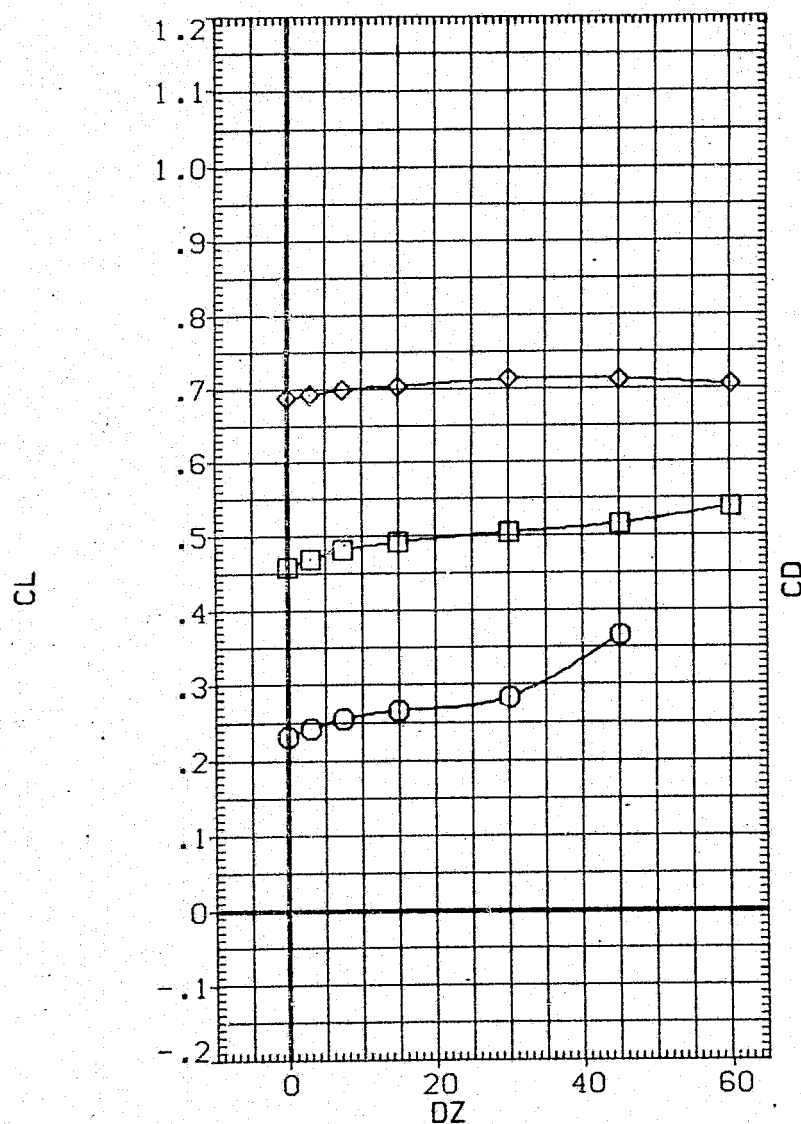


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	6.000	BETAC	.000	ELV-1B .000
□	10.000	ELV-0B	3.000	ELEVON 5.000
◇	14.000	MACH	.600	BETA0 .000
		PHI	.000	DY .000
		ALPHAC	.000	DX 10.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6900	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

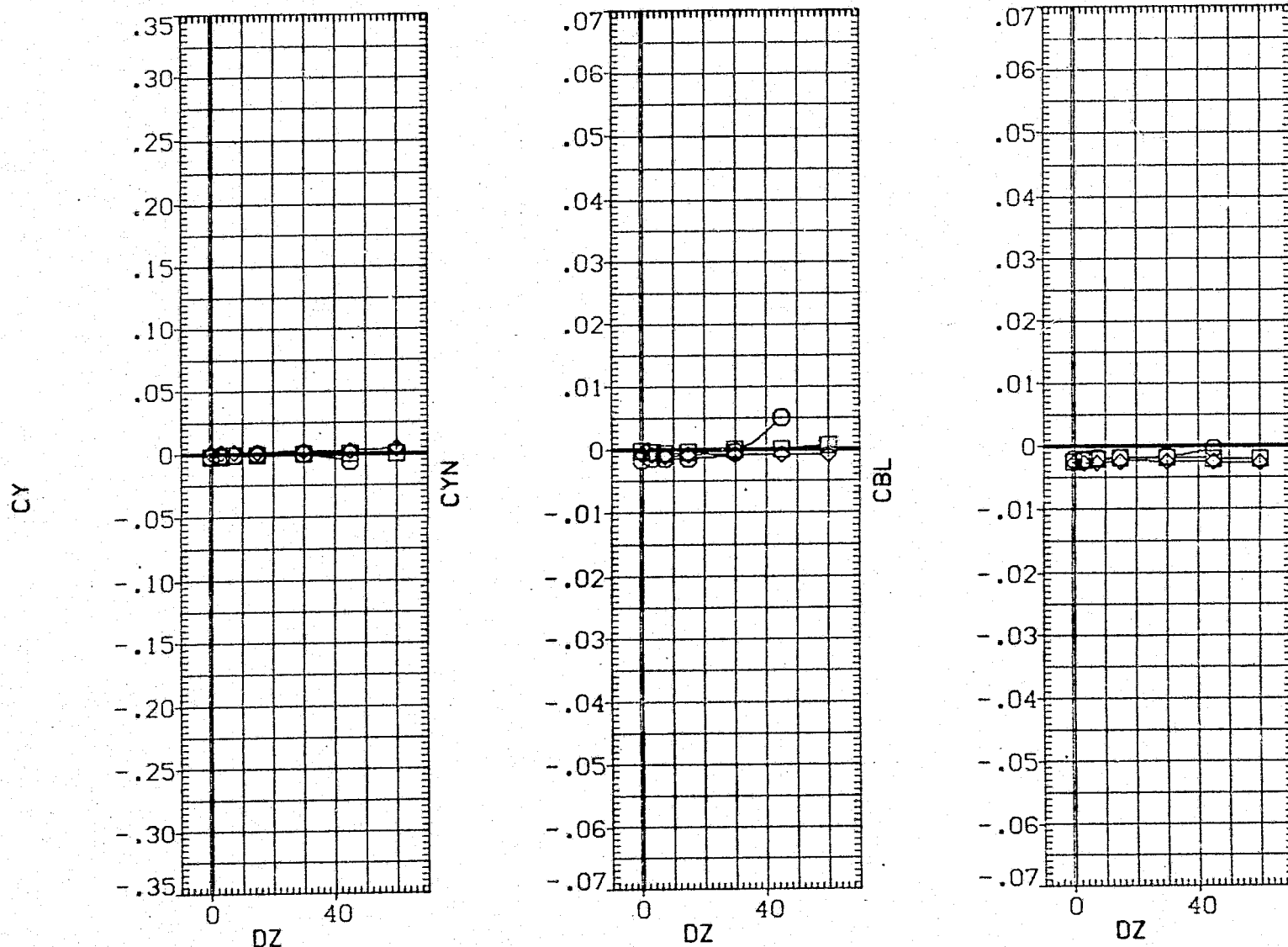


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (050 - 010) (4GN050)

SYMBOL	ALPHA0	PARAMETRIC VALUES		
○	6.000	ALPHAC	.000	BETAC
□	10.000	ELV-IB	.000	ELV-OB
◇	14.000	ELEVON	5.000	MACH
		PHI	.000	OX
		DY	.000	BETAO
				.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

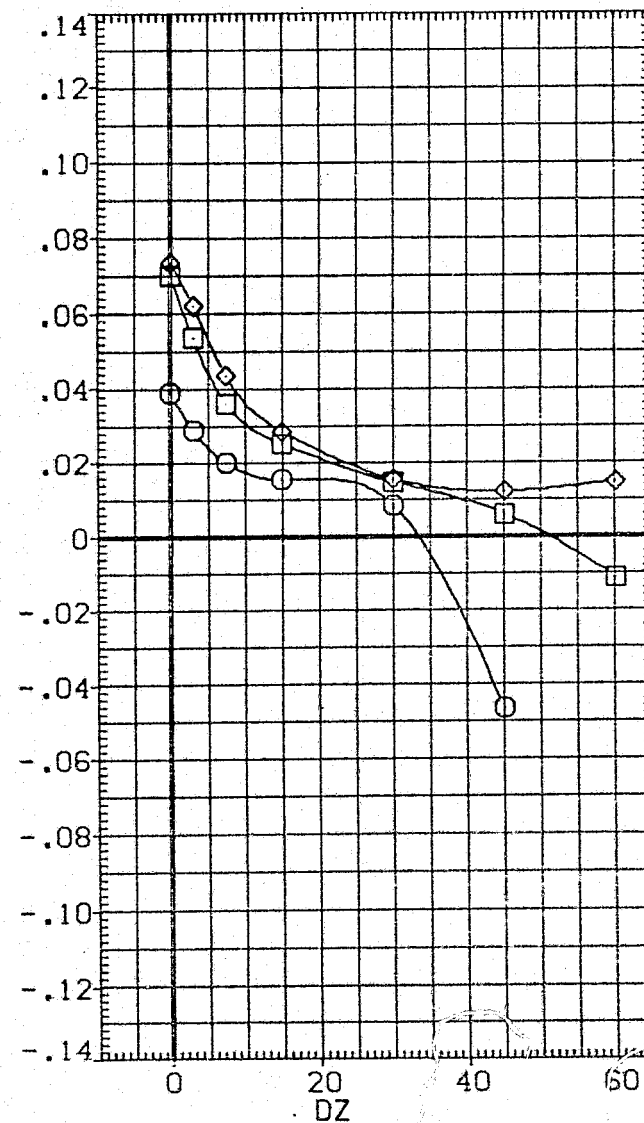
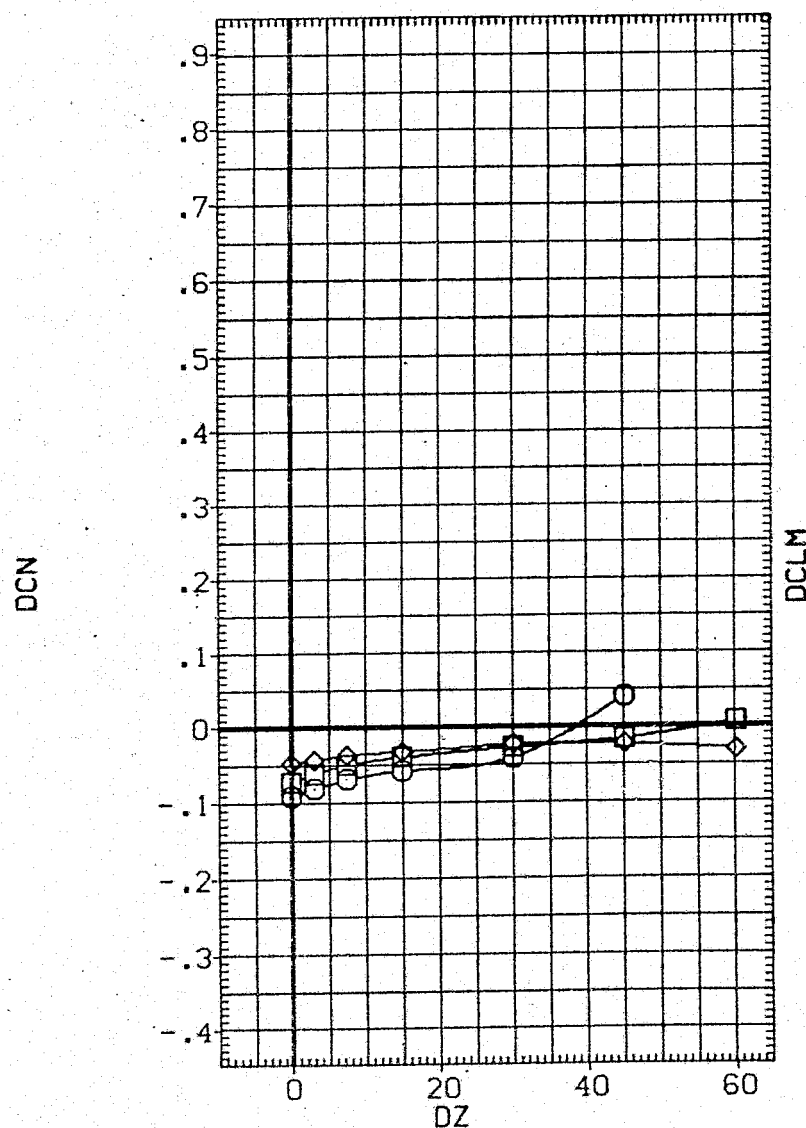


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION		
	6.000	ALPHAC	.000	BEYAC	.000	SREF	2690.0000	SQ.FT.
	10.000	ELV-IB	.000	ELV-OB	3.000	LREF	471.8100	IN.
	14.000	ELEVON	5.000	MACH	.600	BREF	936.6800	IN.
		PHI	.000	DX	10.000	XMRP	1109.0000	IN.X0
		DY	.000	BETA0	.000	YMRP	.0000	IN.Y0
						ZMRP	375.0000	IN.Z0
						SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

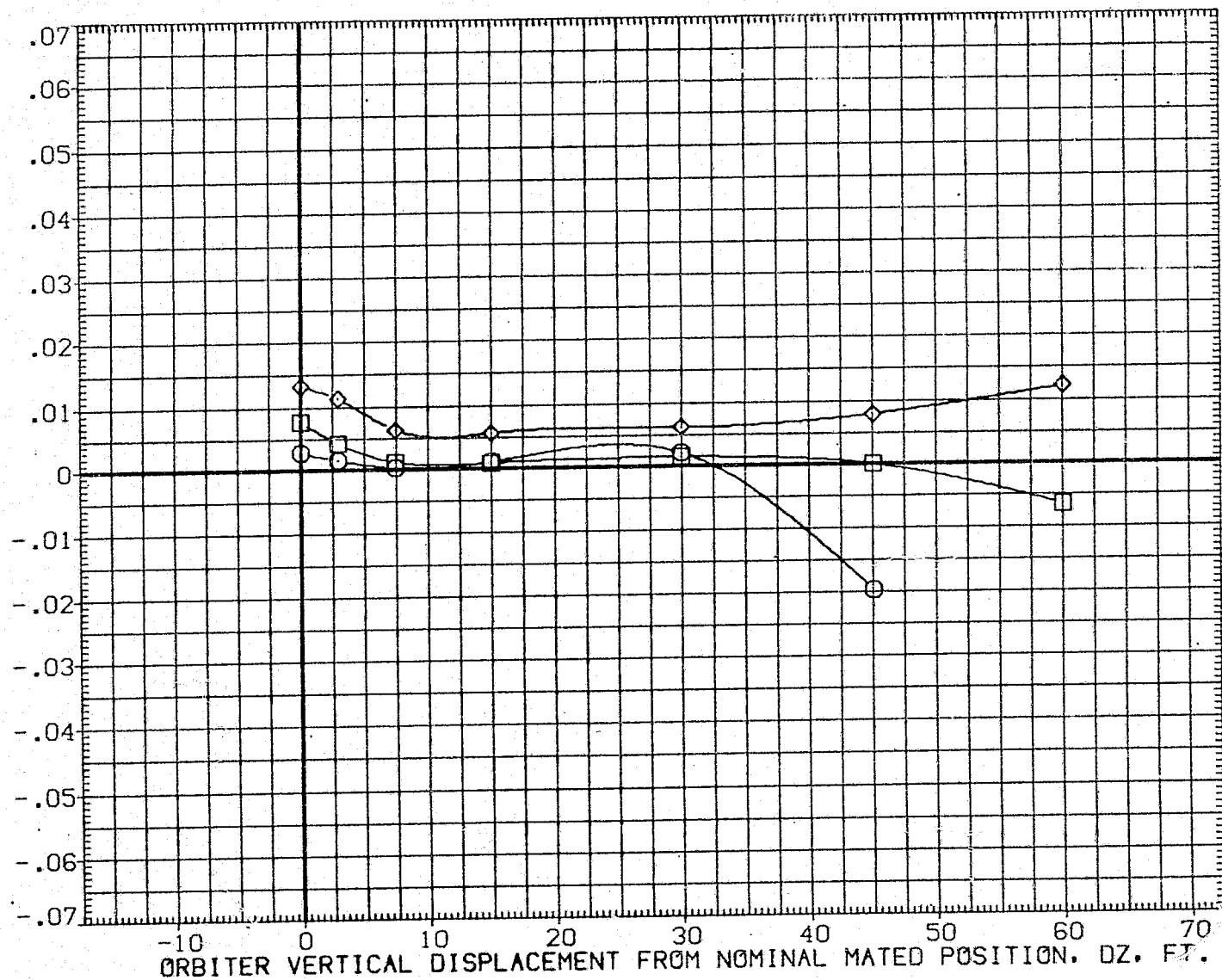


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (050 - 010) (4GN050)

SYMBOL

○
□
◇

ALPHA0

6.000

ALPHAC

PARAMETRIC VALUES

.000

BETAC

.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

10.000

DY

.000

BETA0

.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

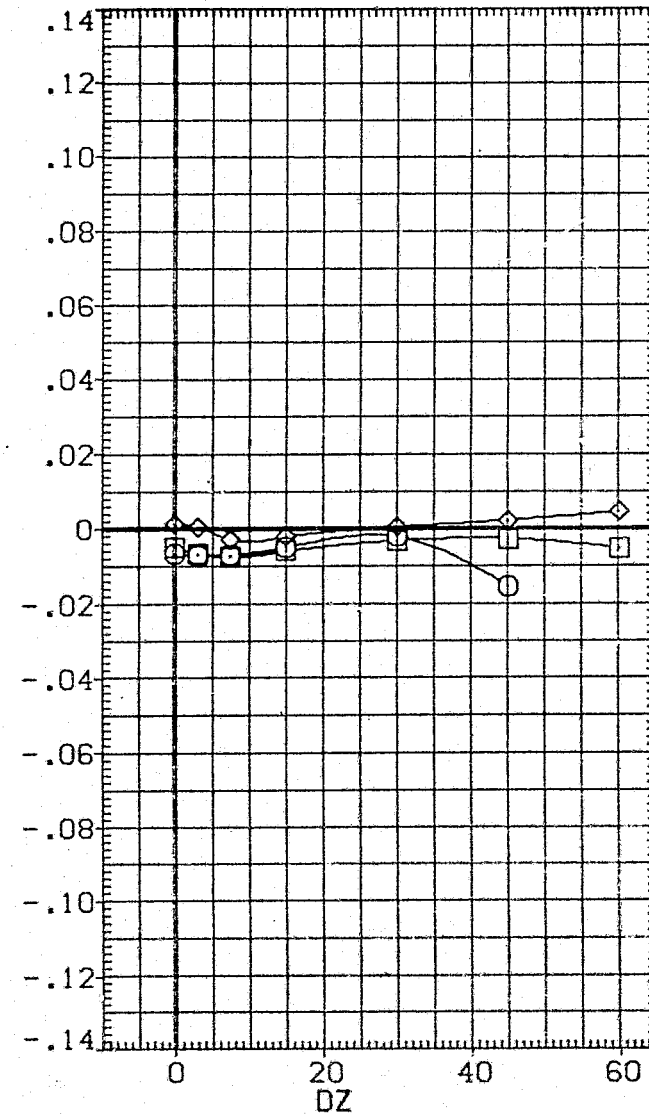
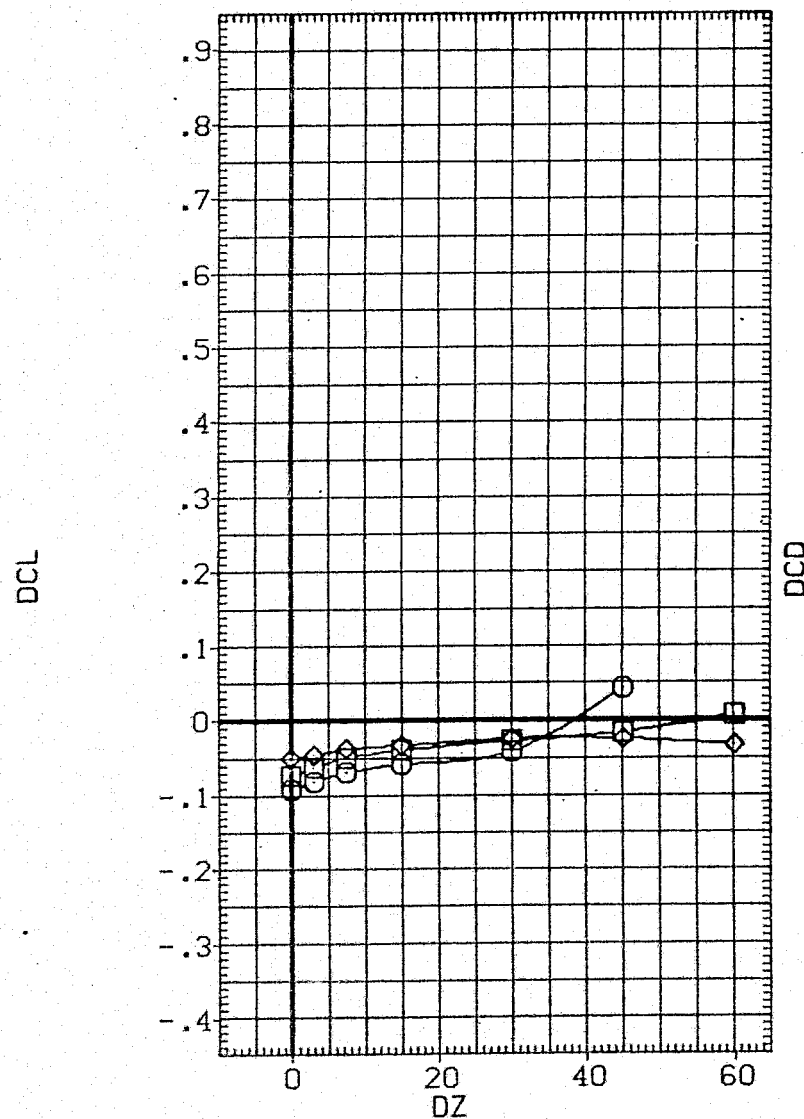


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ELV-IB .000 ELV-OB 3.000
□	10.000	ELEVON 5.000 MACH .600
◇	14.000	BETA0 .000 BETAC .000
		PHI .000 DY .000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

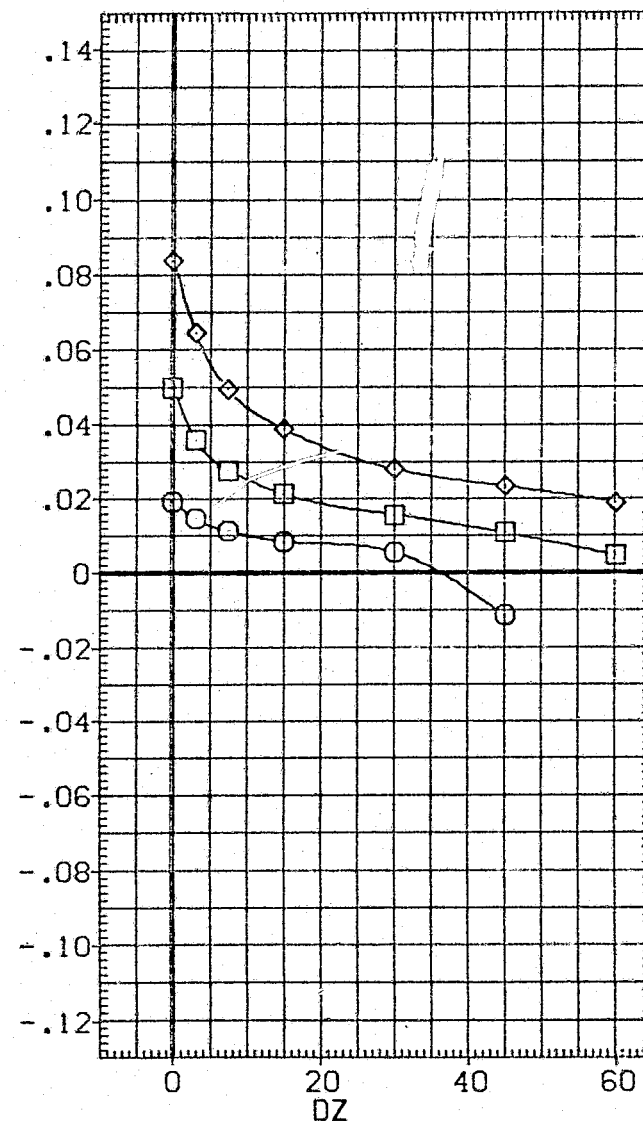
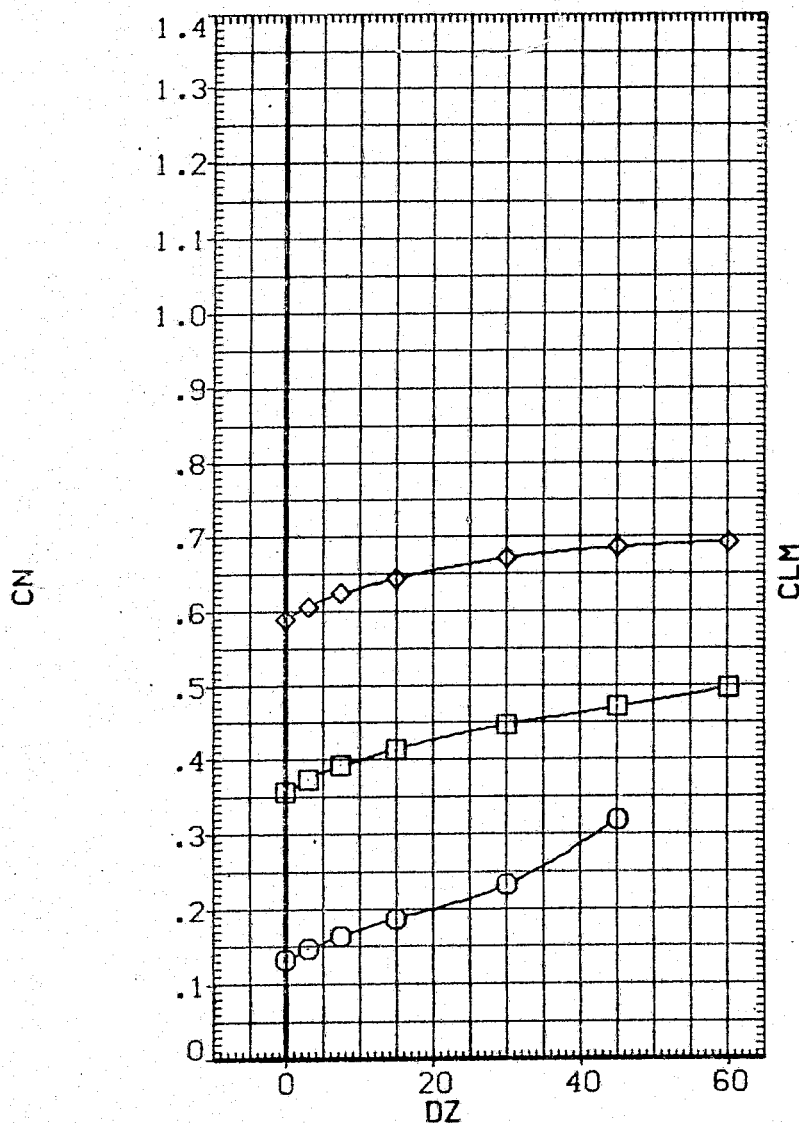


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(26N053)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	6.000	ELV-1B	.000	ELV-0B	3.000
□	10.000	ELEVON	5.000	MACH	.600
◇	14.000	BETA0	.000	BETAC	.000
		PHI	.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

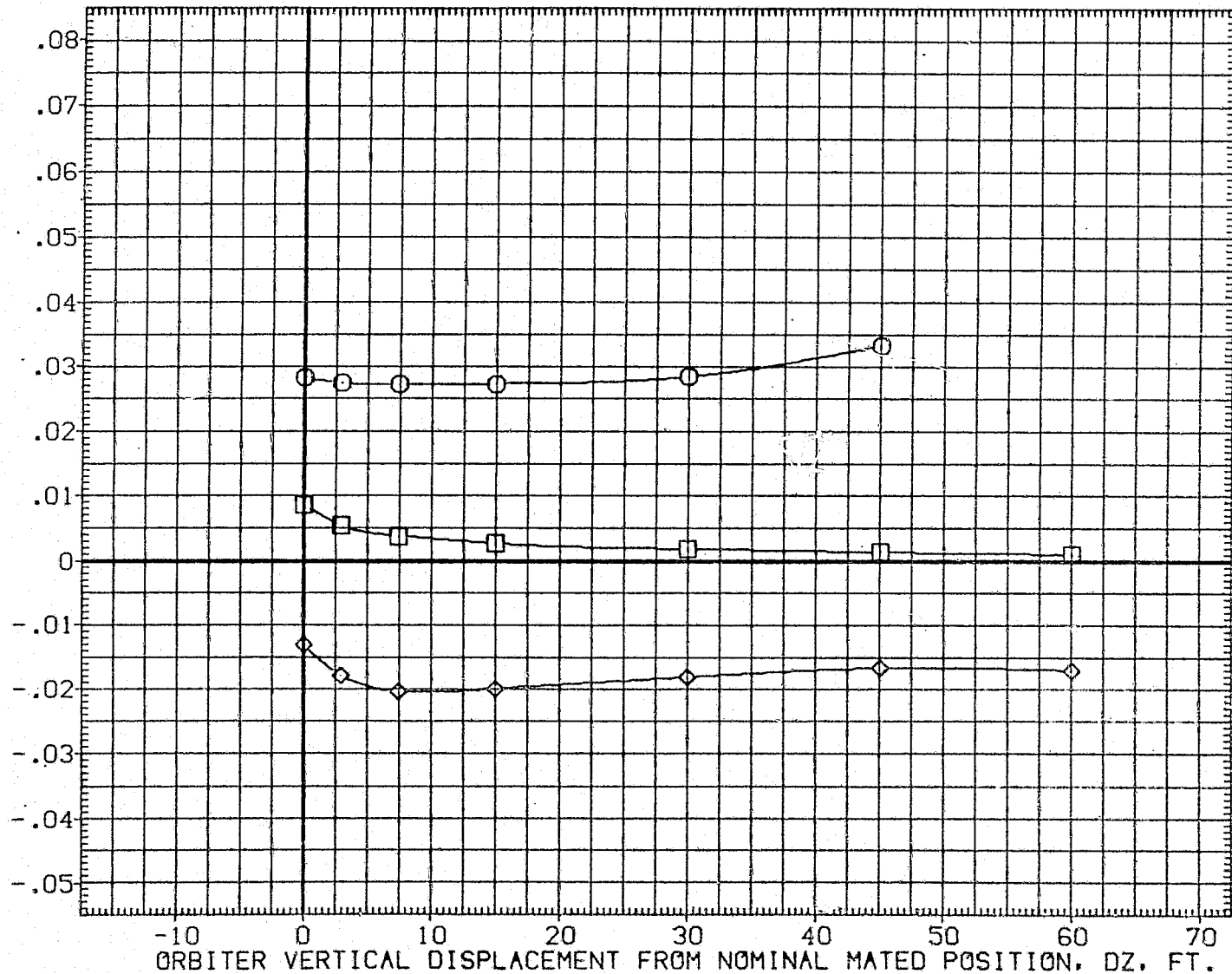


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ELV-1B .000 ELV-0B 3.000
□	10.000	ELEVON 5.000 MACH .600
◇	14.000	BETA0 .000 BETAC .000
		PHI .000 DY .000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

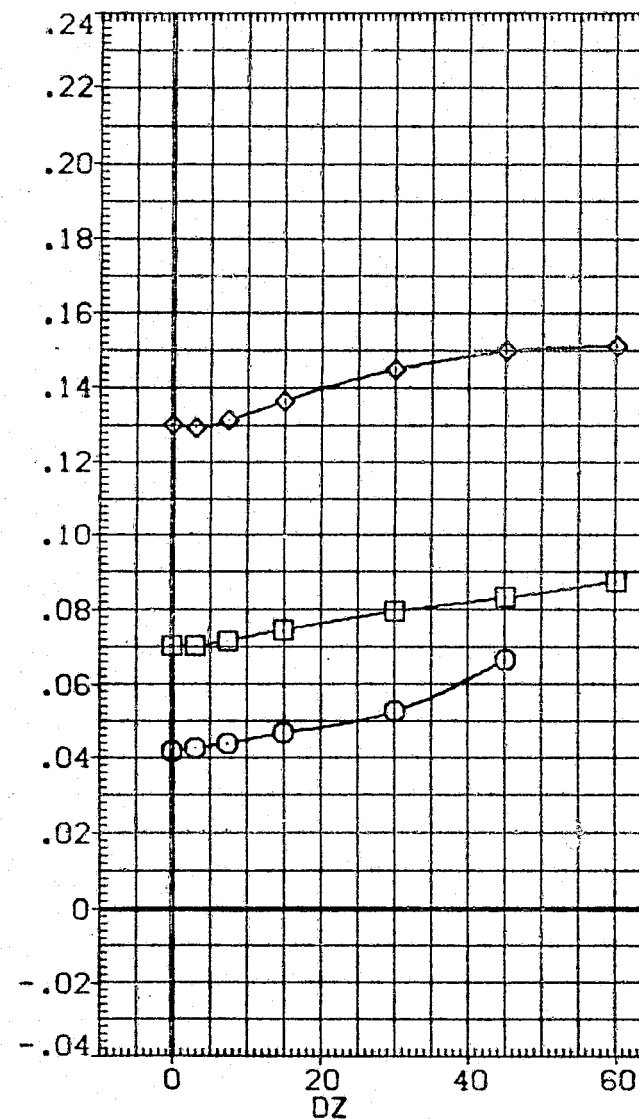
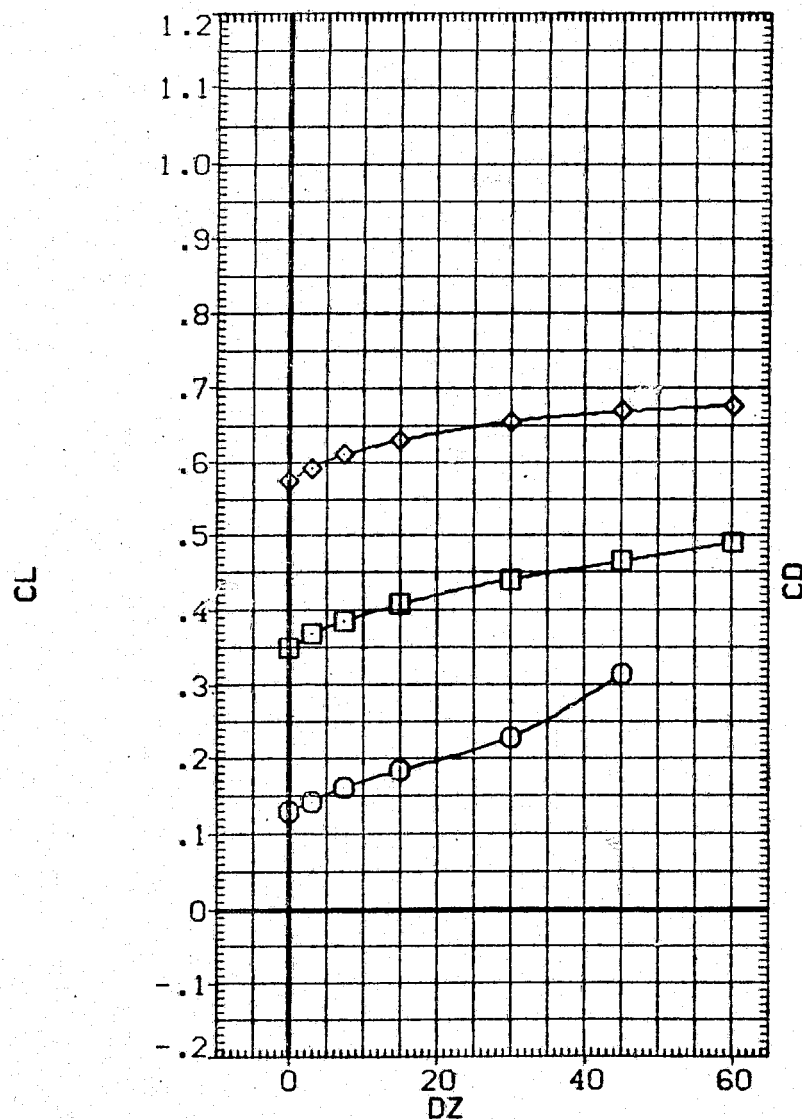


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN053)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	6.000		.000		3.000
□	10.000	ELEVON	5.000	MACH	.600
◇	14.000	BETA0	.000	BETAC	.000
		PHI	.000	DY-	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

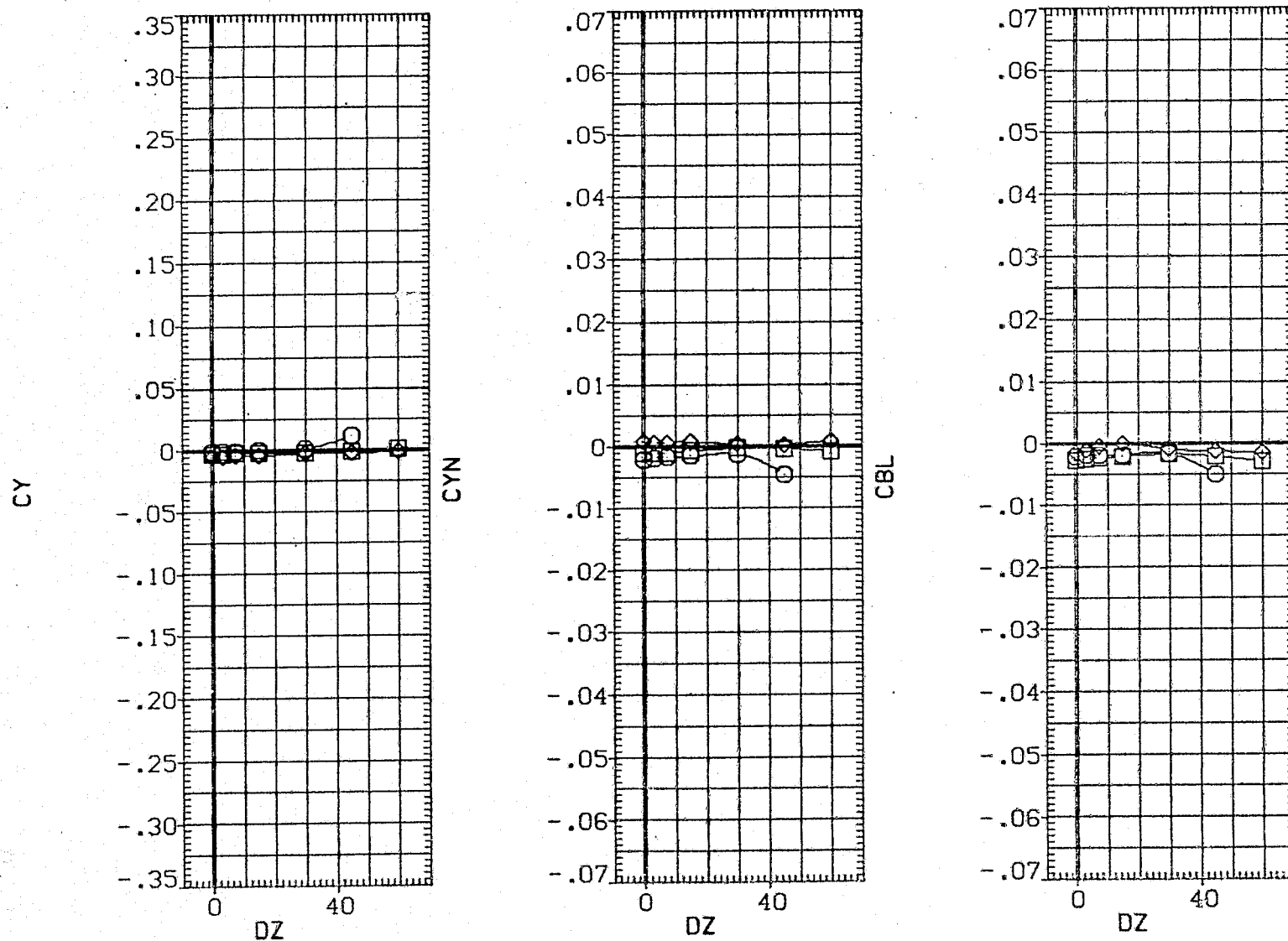


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0

6.000
10.000
14.000

ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000 BETAC .000
.000 ELV-OB 3.000
5.000 MACH .600
.000 DX 10.000
.000 BETA0 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.9100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

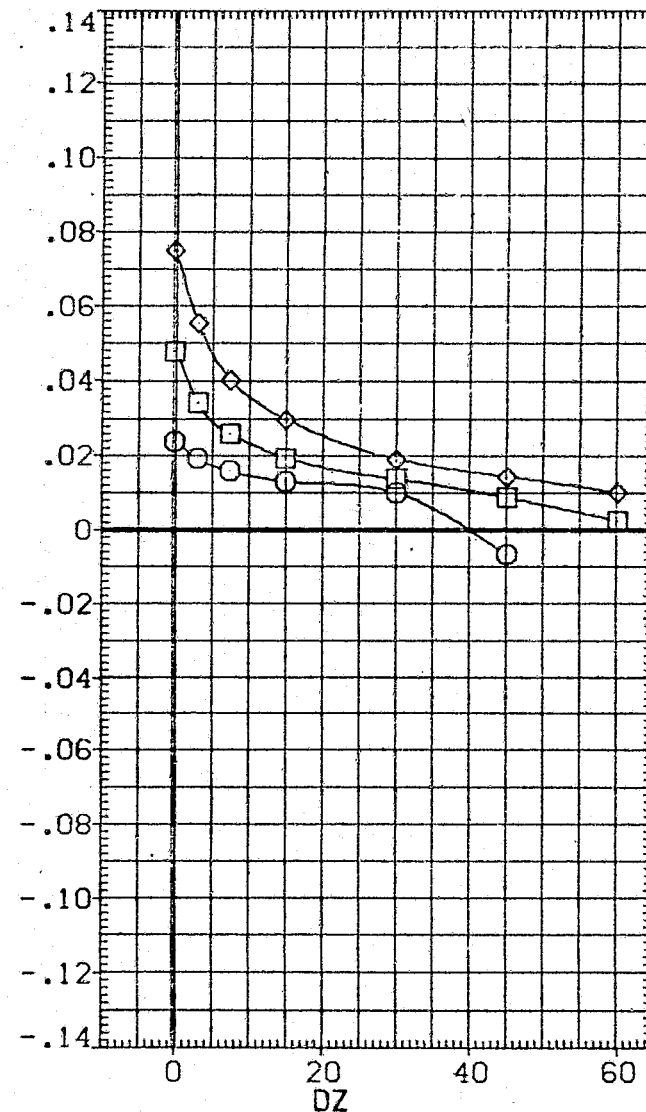
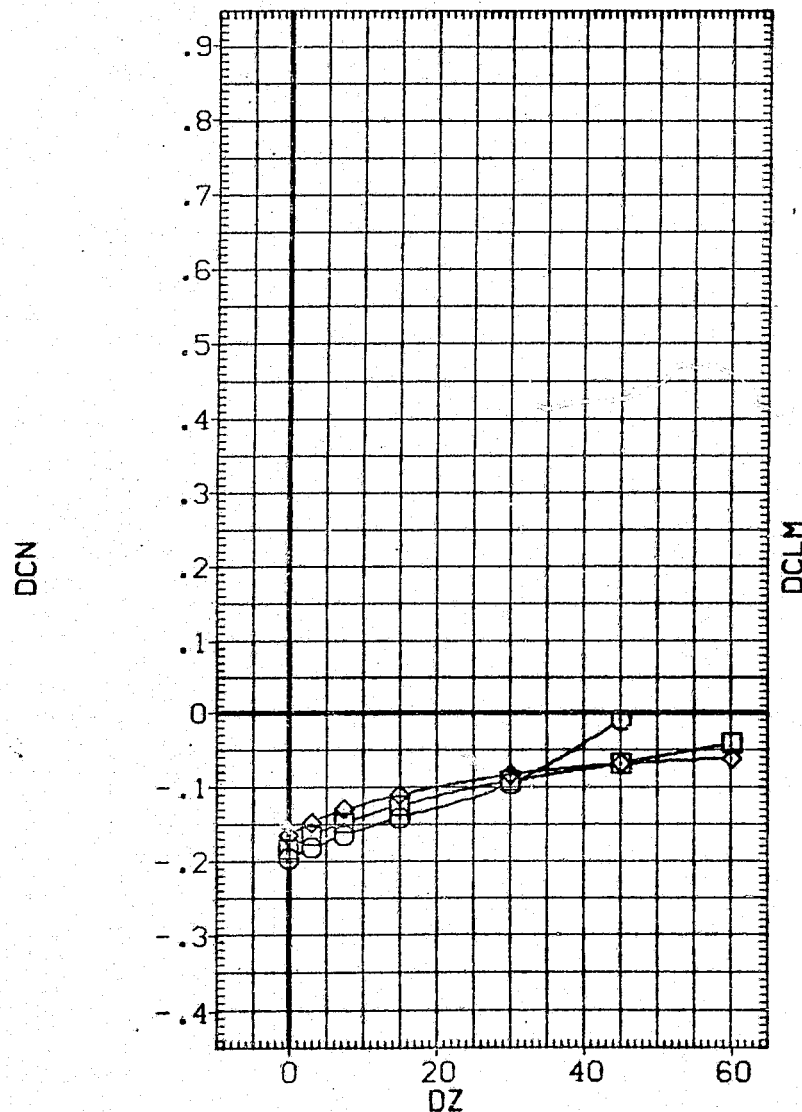


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D. 053 - 010 (4GN053)

SYMBOL

○

□

◇

ALPHA0

6.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

10.000

DY

.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

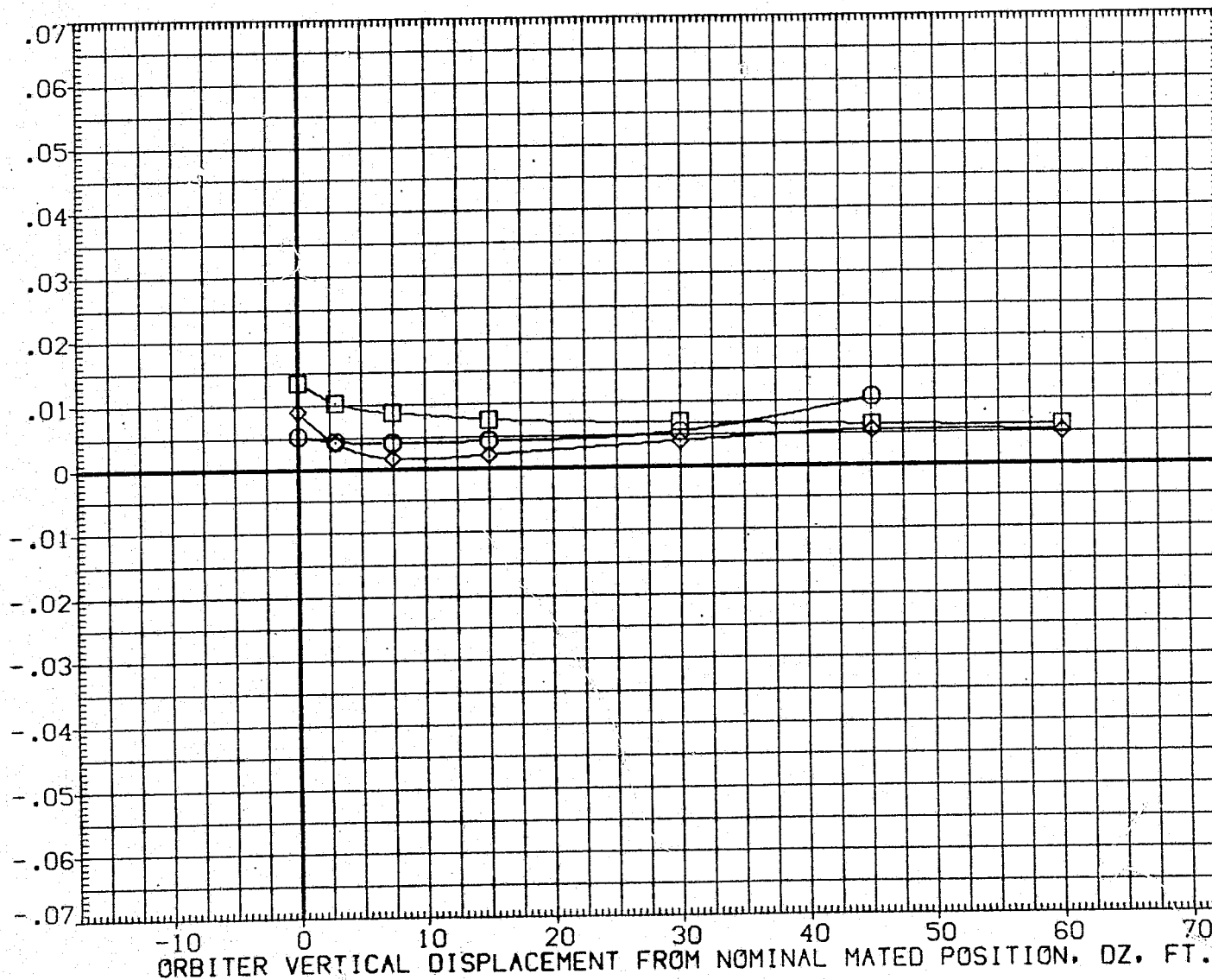


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES		
○	6.000	ALPHAC 4.000	BETAC	.000
□	10.000	ELV-IB .000	ELV-OB	3.000
◇	14.000	ELEVON 5.000	MACH	.600
		PHI .000	DX	10.000
		DY .000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SD.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

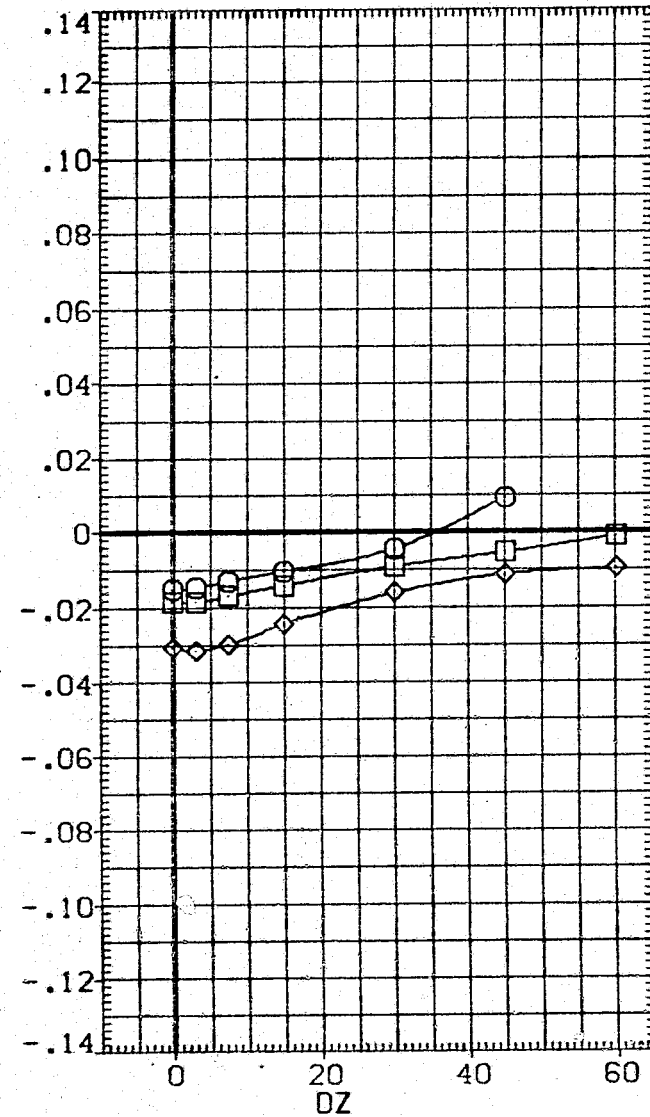
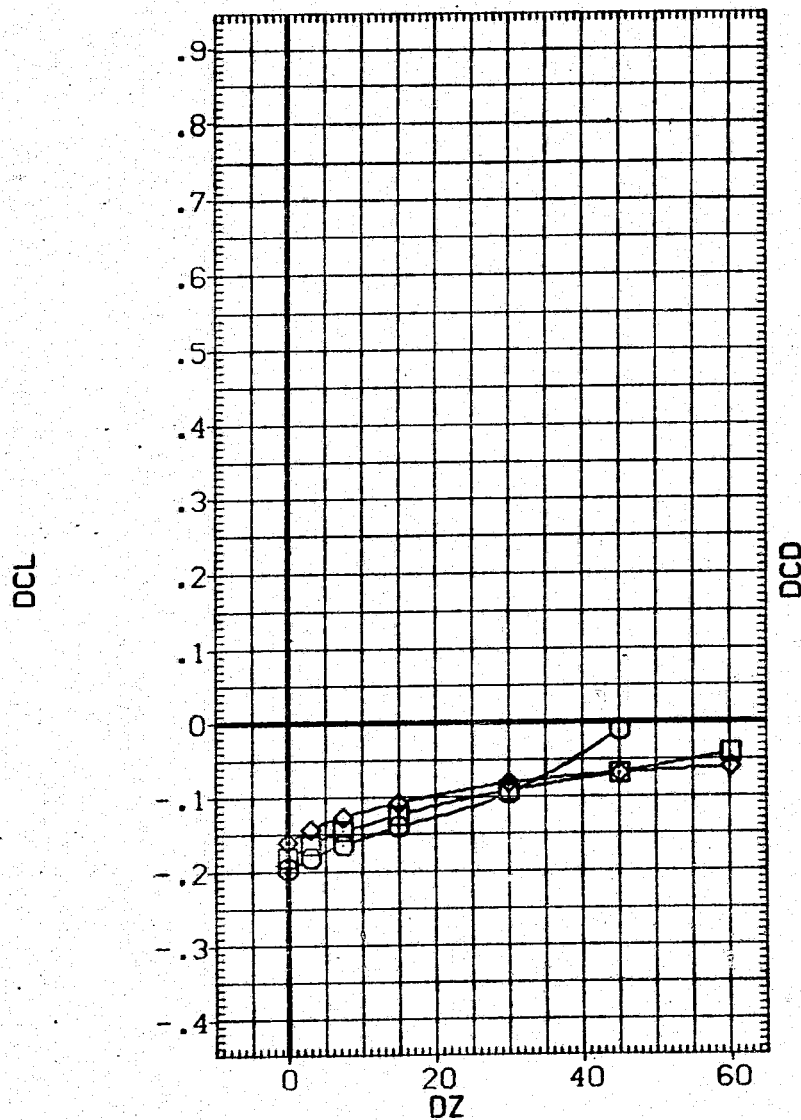


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(26N056)

SYMBOL	ALPHA0	PARAMETRIC VALUES		
○	6.000	ELV-1B .000	ELV-0B 3.000	
□	10.000	ELEVON 5.000	MACH .600	
◇	14.000	BETA0 .000	BETAC .000	
		PHI .000	DY .000	
		DX 10.000	ALPHAC 8.000	

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

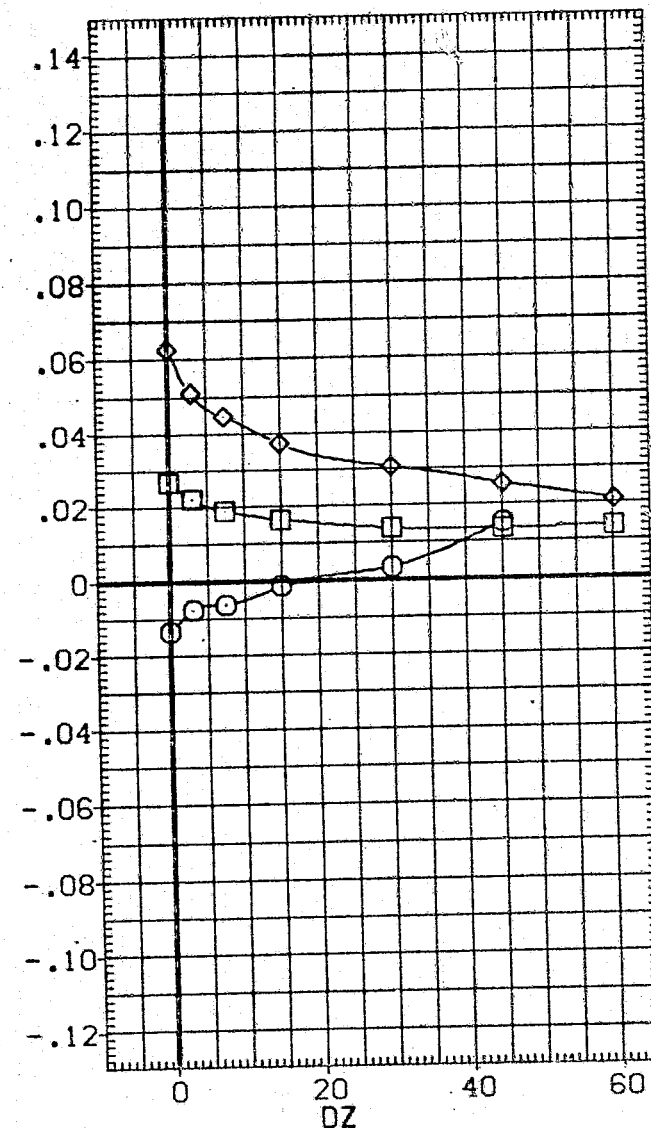
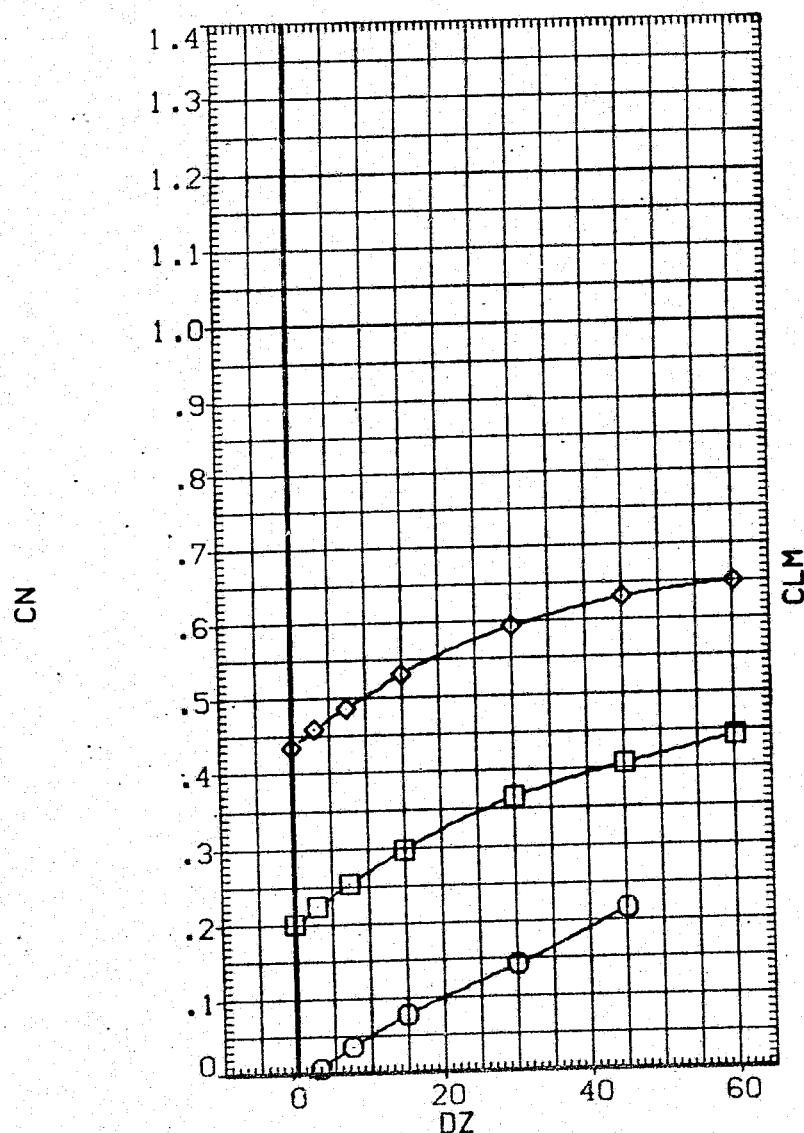


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (.01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	3.000
○	6.000	ELEVON	.000	MACH	.600
□	10.000	BETA0	5.000	BETAC	.000
◇	14.000	PHI	.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

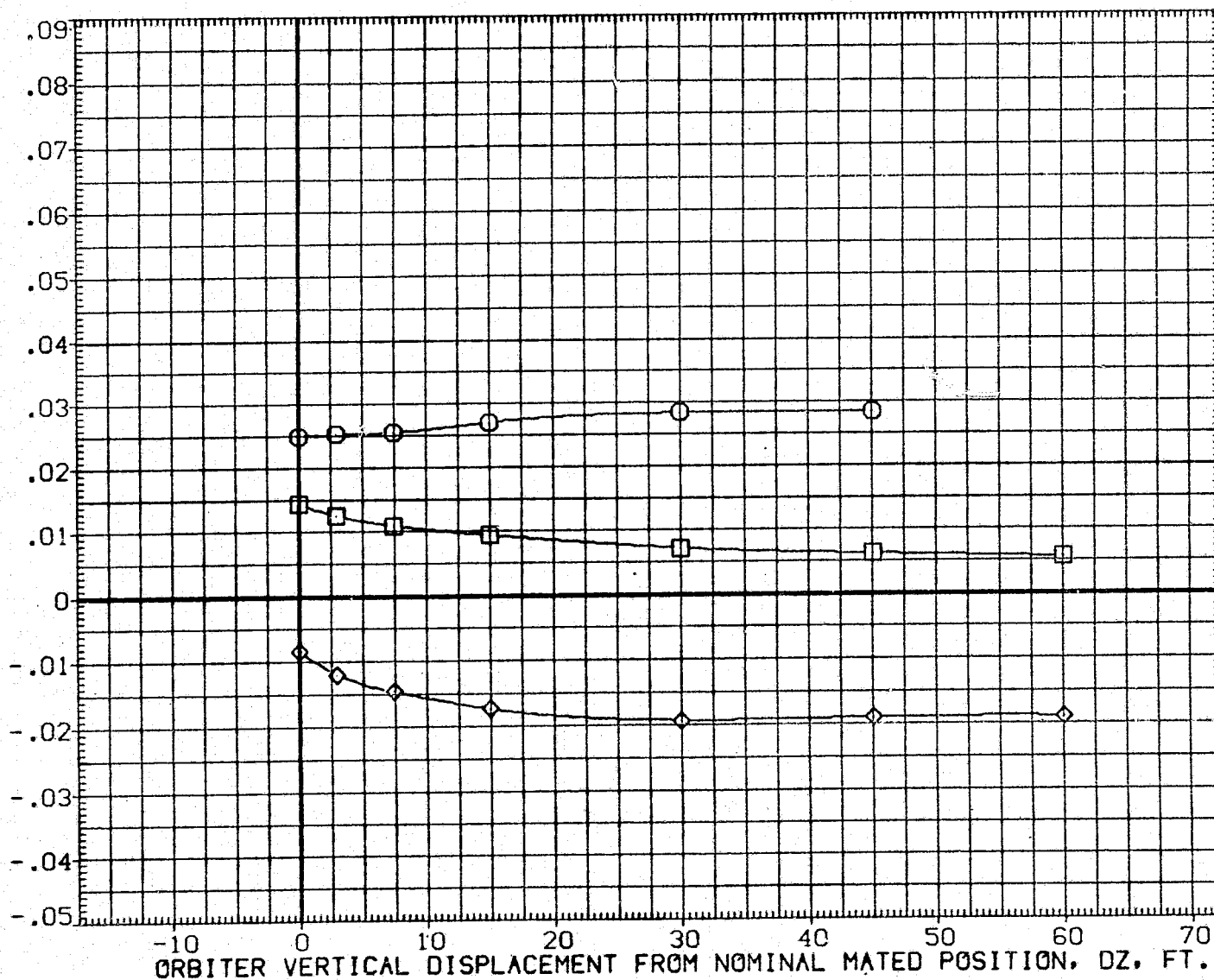


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(26N056)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ELV-18 .000 ELV-08 3.000
□	10.000	ELEVON 5.000 MACH .600
◇	14.000	BETA0 .000 BETAC .000
		PHI .000 DY .000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

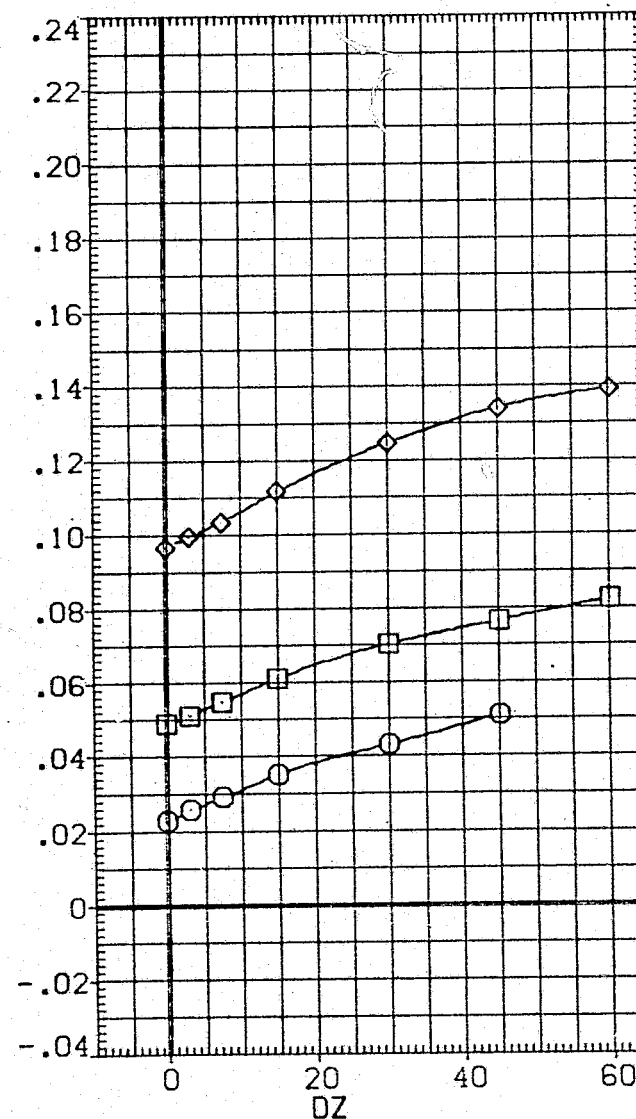
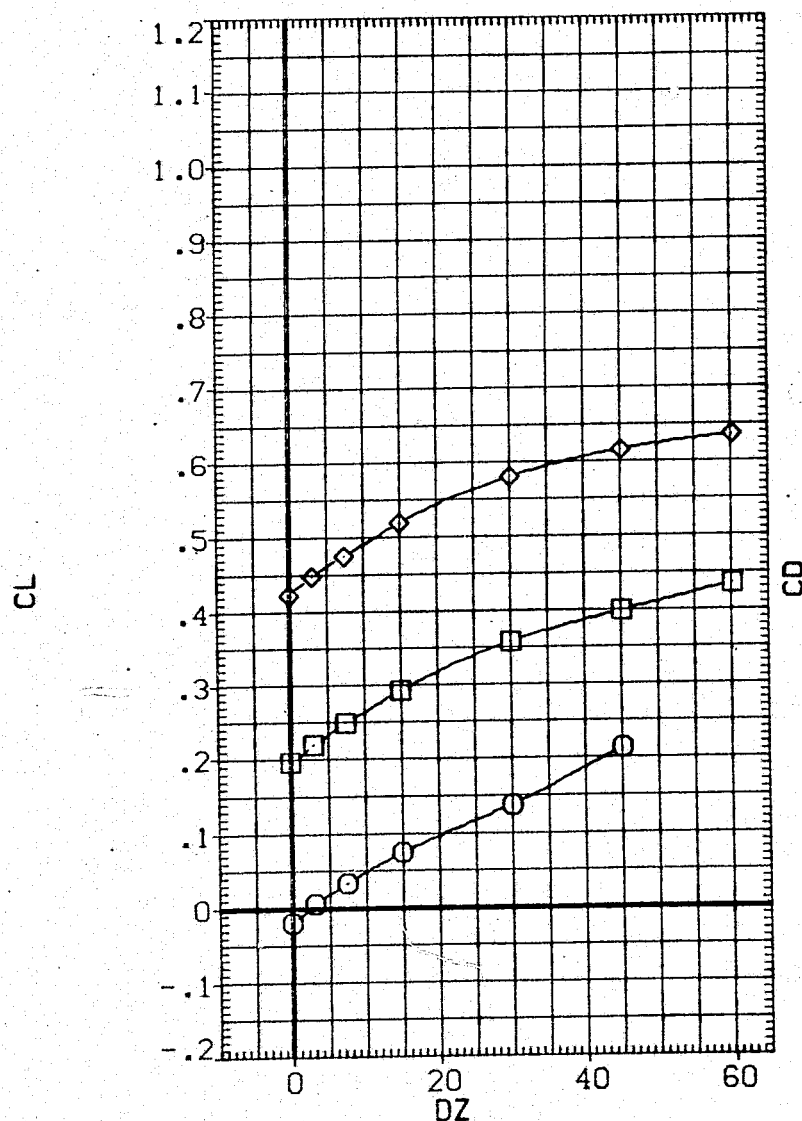


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	6.000	ELEVON	.000	MACH	3.000
□	10.000	BETA0	5.000	BETAC	.600
◇	14.000	PHI	.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

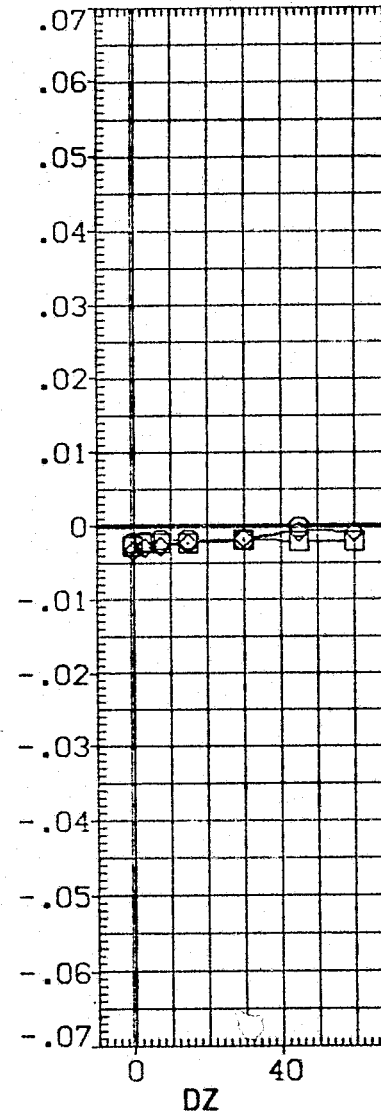
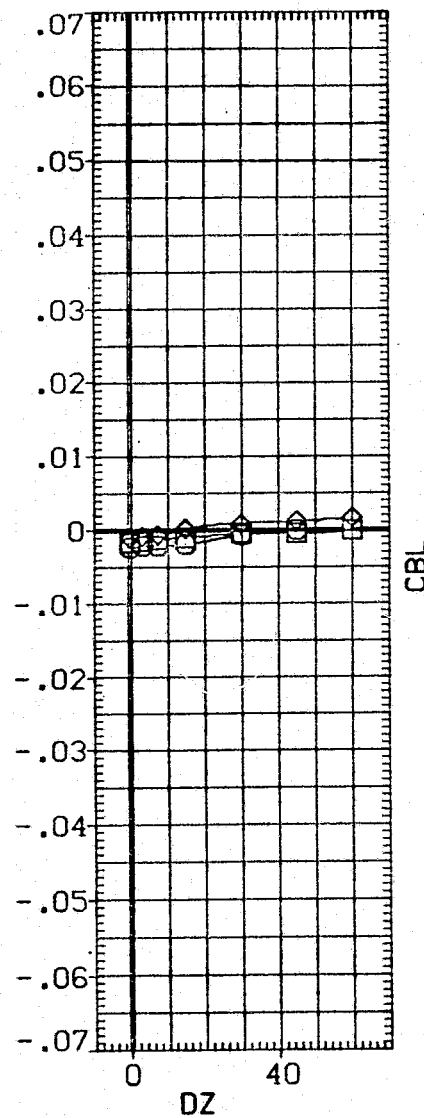
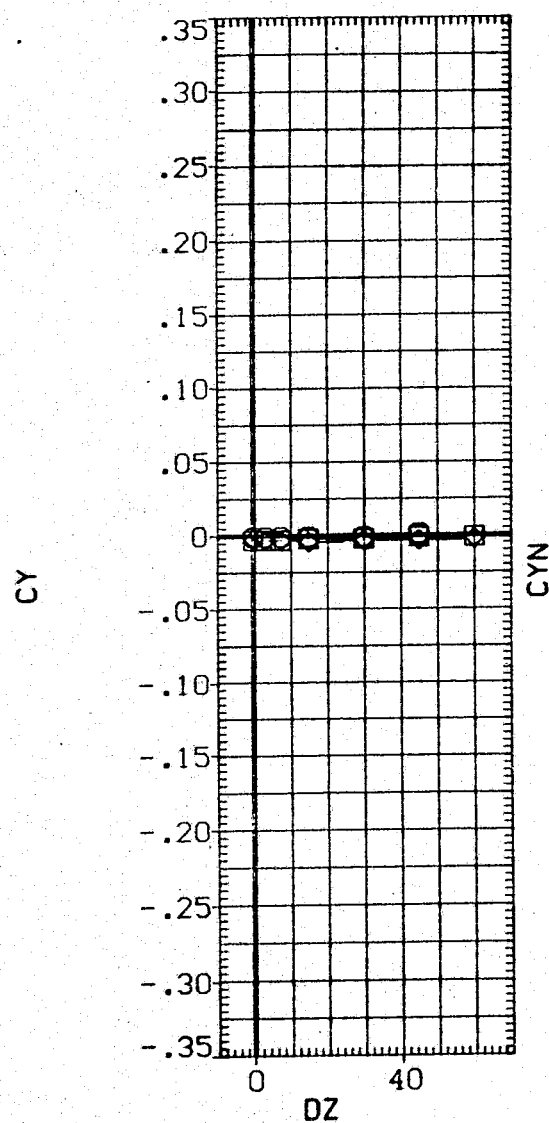


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (056 - 010)(4GN056)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 8.000 BETAC .000
□	10.000	ELV-18 .000 ELV-08 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

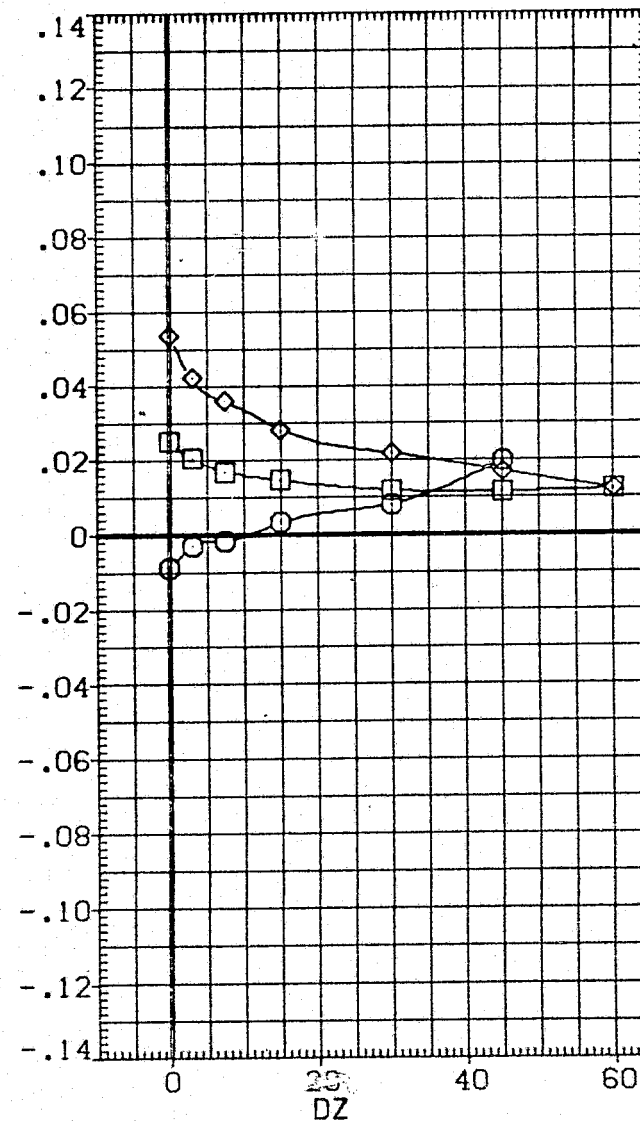
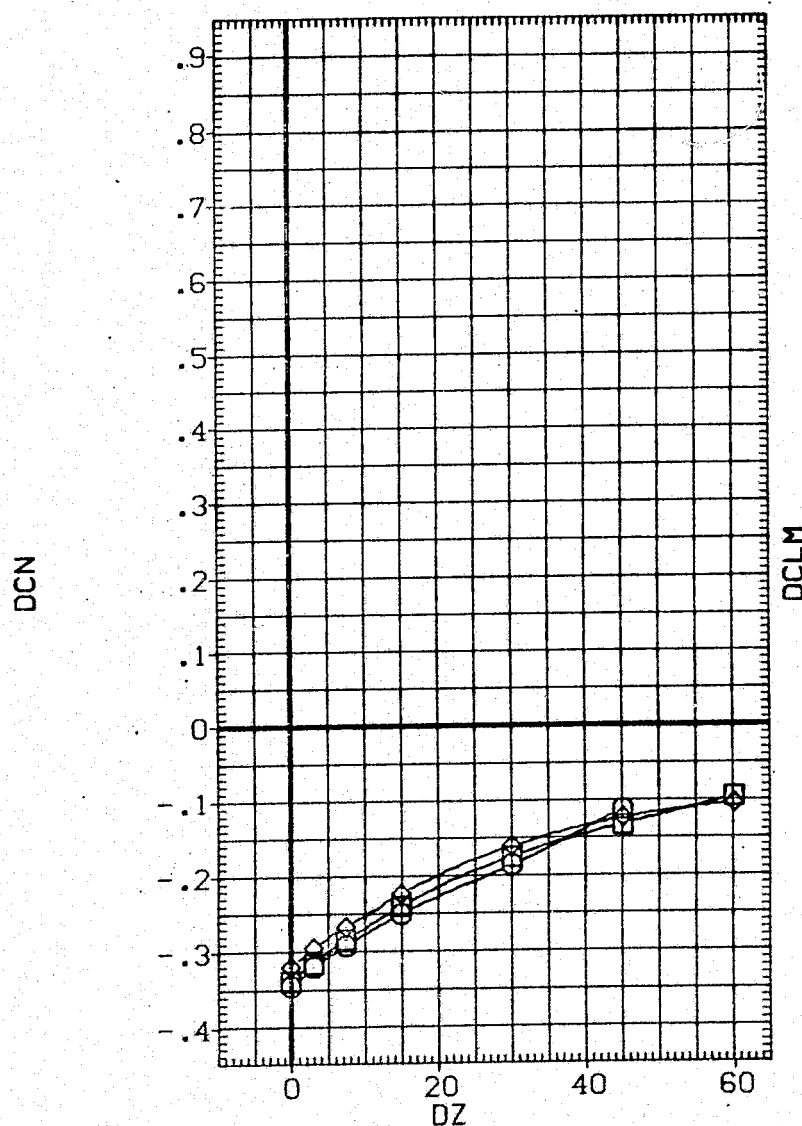


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	6.000	ALPHAC	8.000	BETAC	.000
□	10.000	ELV-1B	.000	ELV-0B	3.000
◇	14.000	ELEVON	5.000	MACH	.600
		PHI	.000	OX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

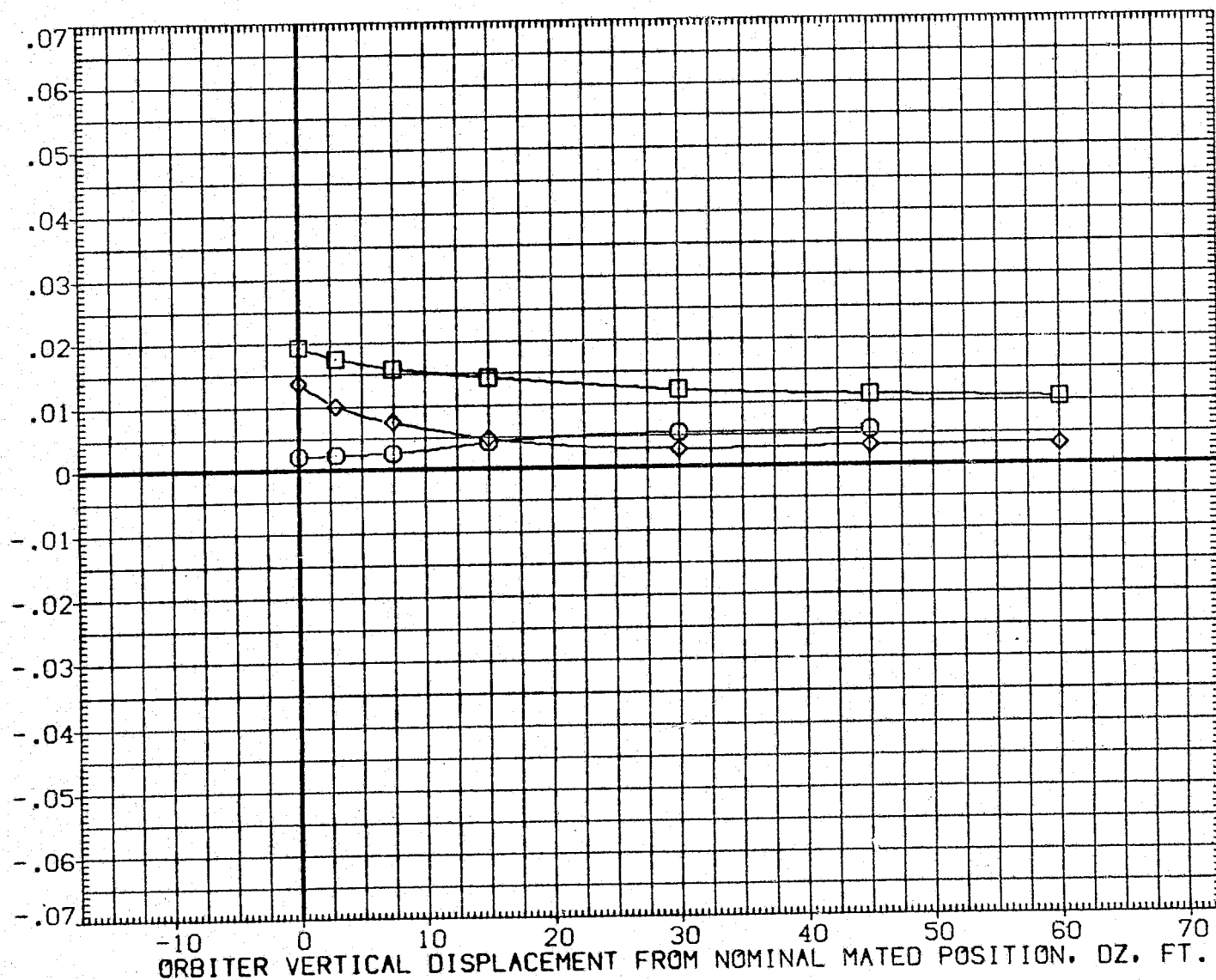


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (056 - 010) (4GN056)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 8.000 BETAC .000
□	10.000	ELV-IB .000 ELV-OB 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

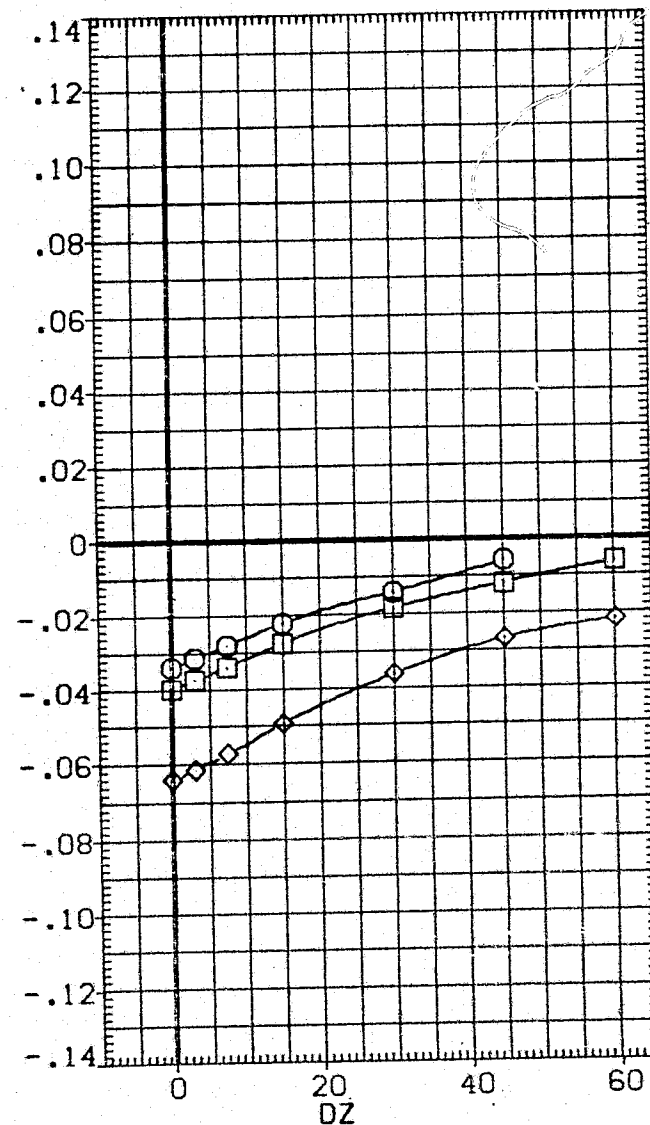
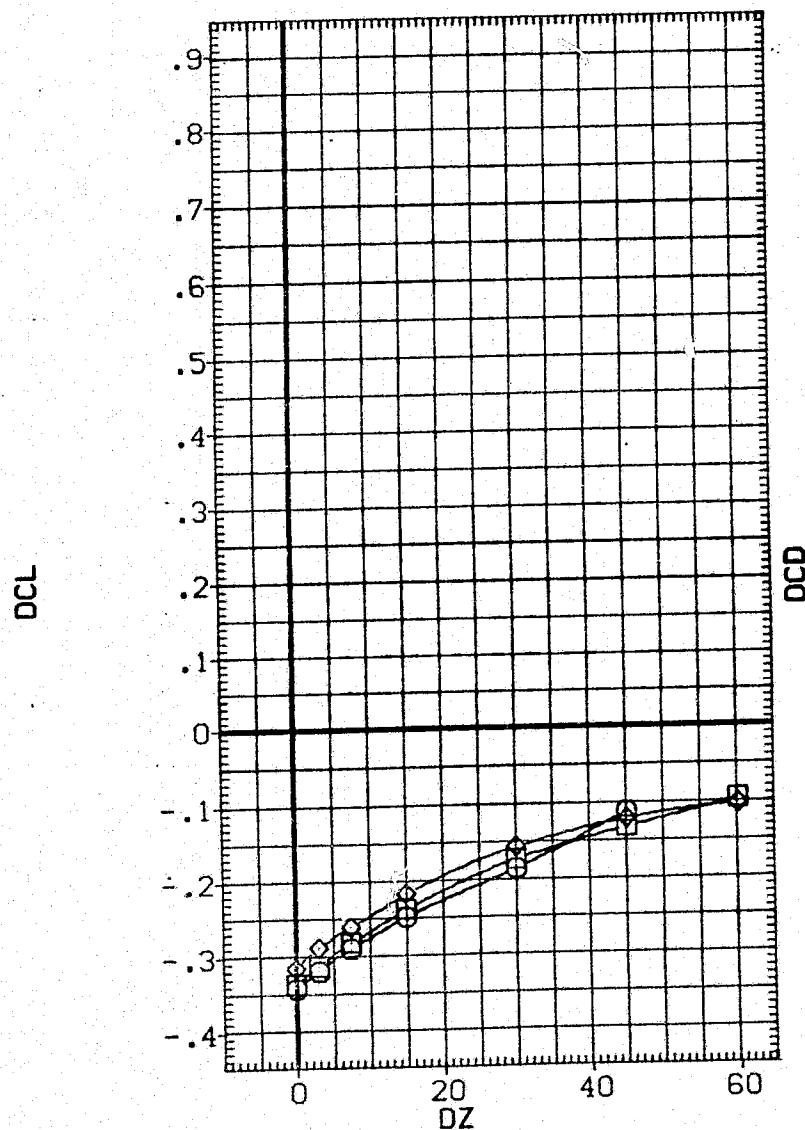


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-18	
○	6.000	.000	ELV-08	3.000	5.000
□	10.000	.600	BETA0	.000	.000
◇	14.000	.000	DX	20.000	
		ALPHAC			

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

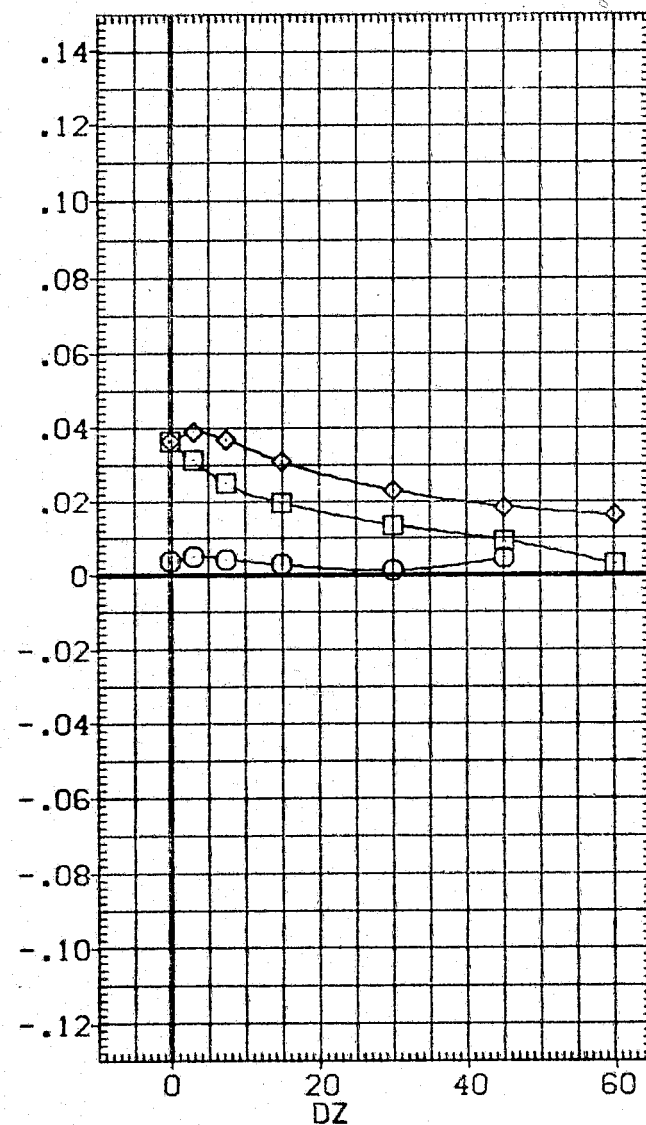
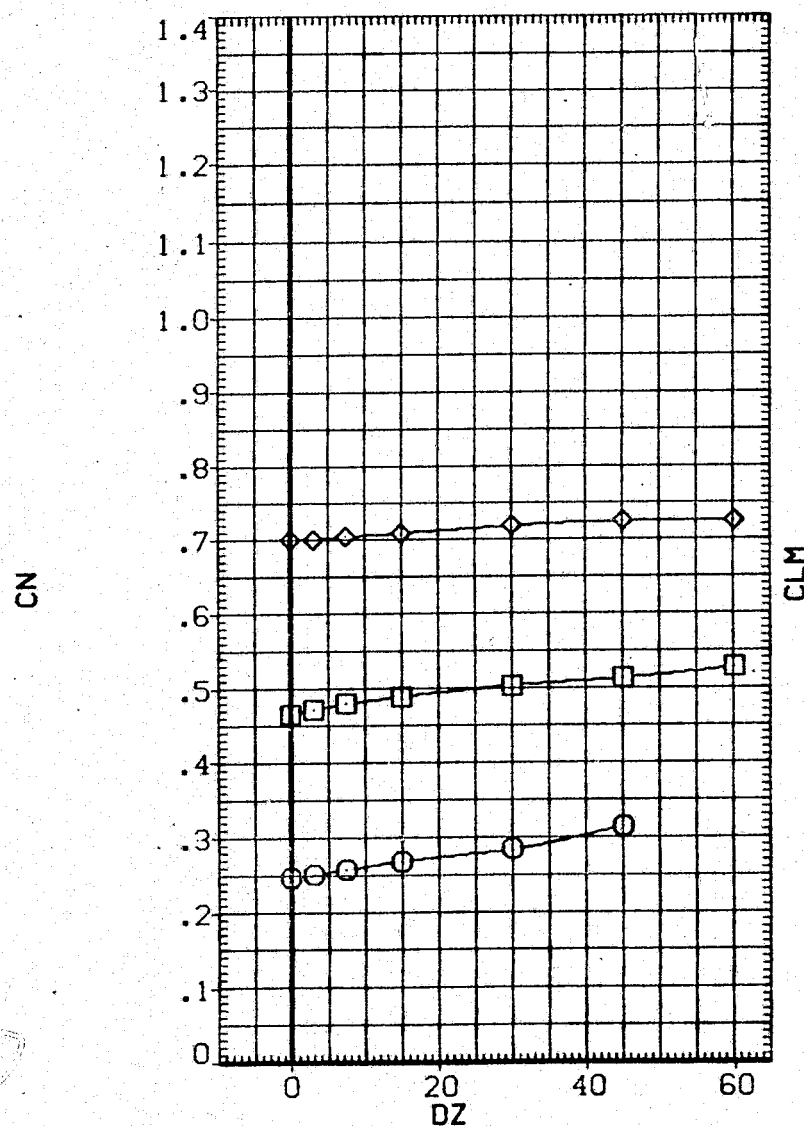


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN051)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	6.000	BETAC	.000	ELV-1B	.000
□	10.000	ELV-0B	3.000	ELEVON	5.000
◇	14.000	MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		ALPHAC	.000	DX	20.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

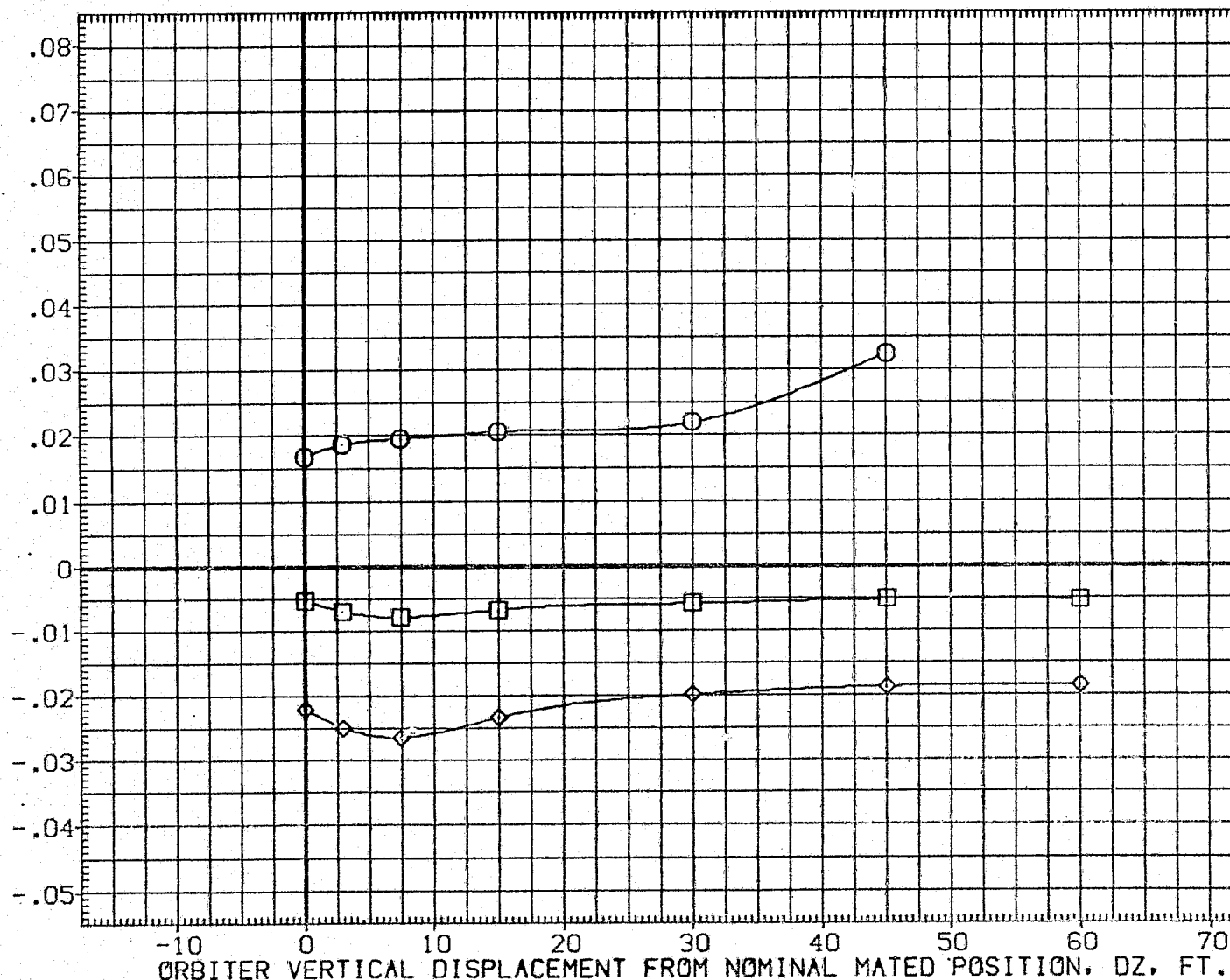


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-18	
○	6.000	.000	3.000	ELEVON	.000
□	10.000	.000	5.000	BETA0	.000
◇	14.000	.000	20.000	DY	.000
		ALPHAC	.000	DX	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

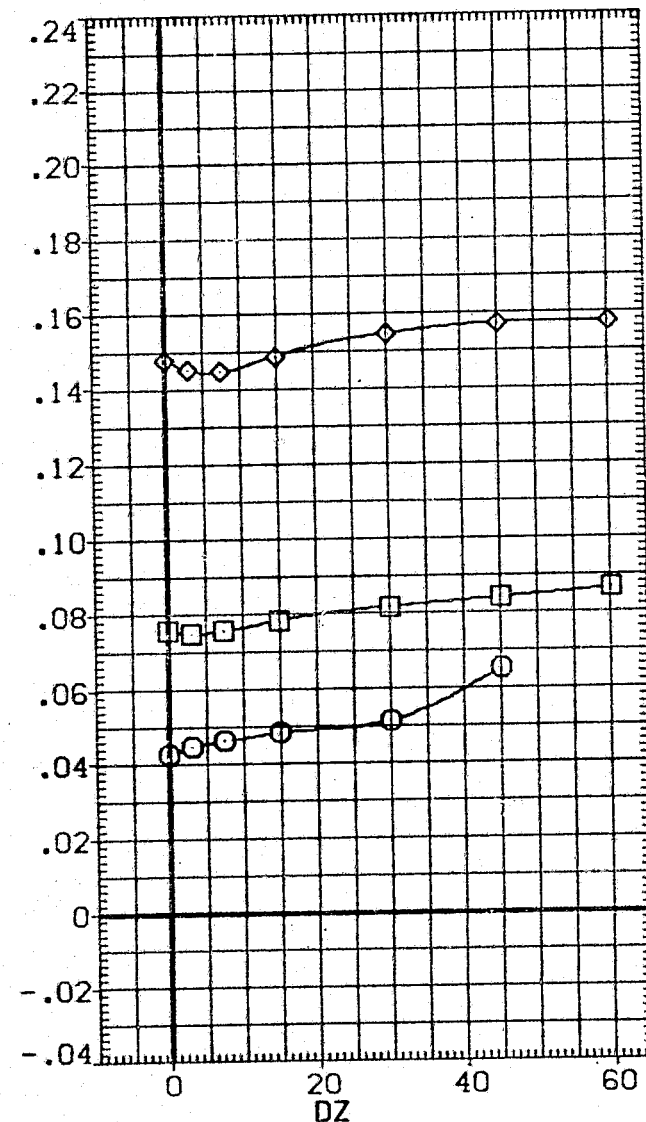
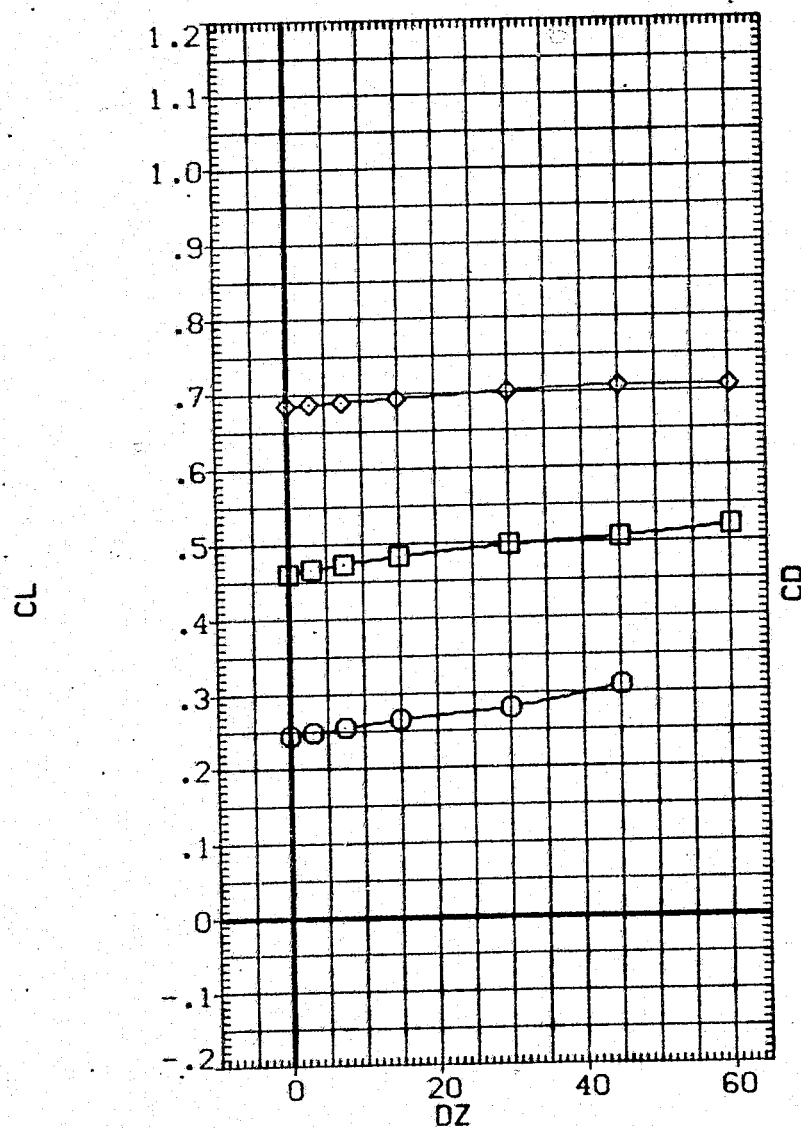


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN051)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-1B
○	6.000		.000	.000
□	10.000	ELV-0B	3.000	5.000
◇	14.000	MACH	.600	.000
		PHI	.000	.000
		ALPHAC	.000	20.000
			DX	

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

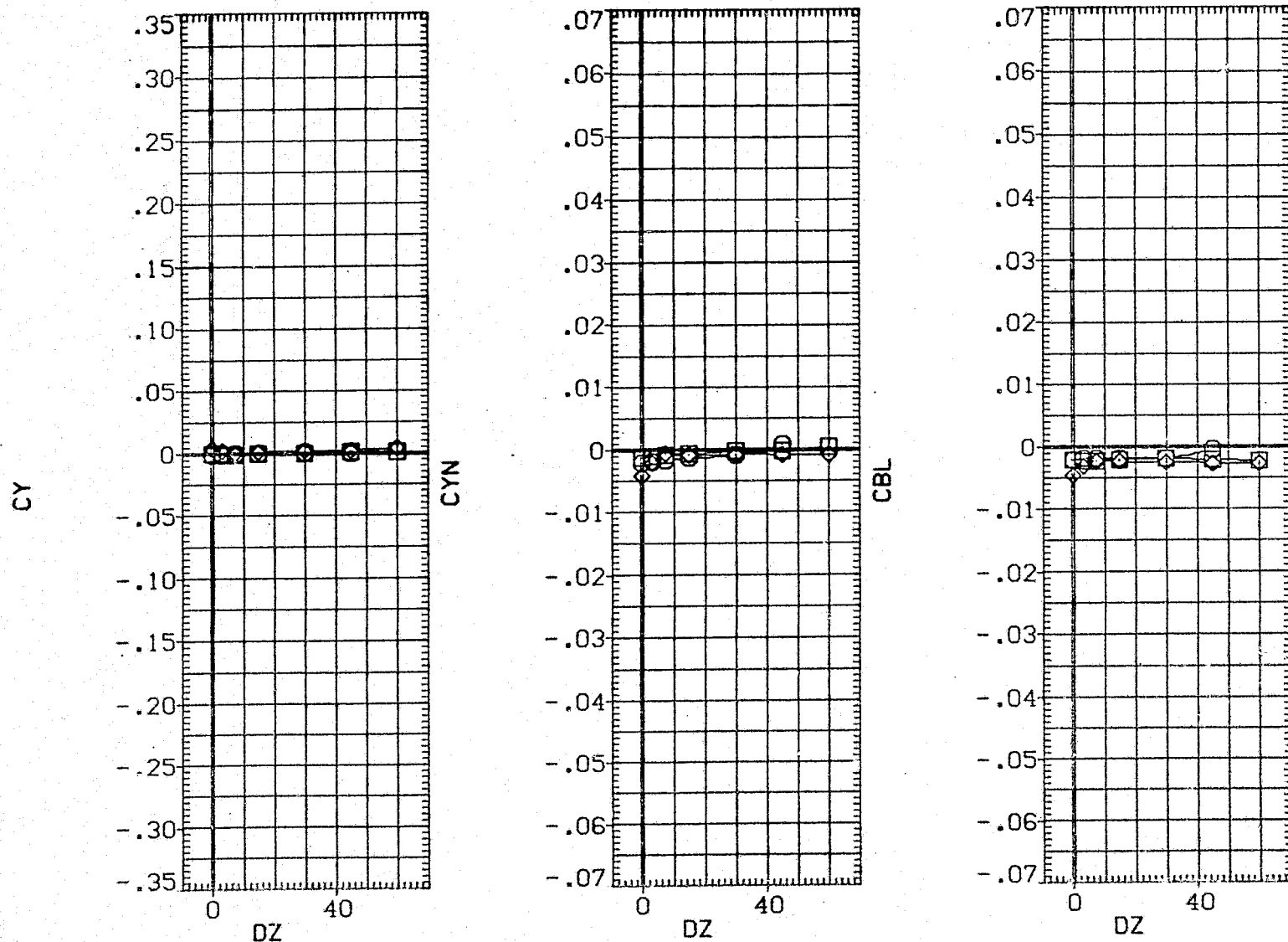


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC .000 BETAC .000
□	10.000	ELV-1B .000 ELV-0B 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX 20.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

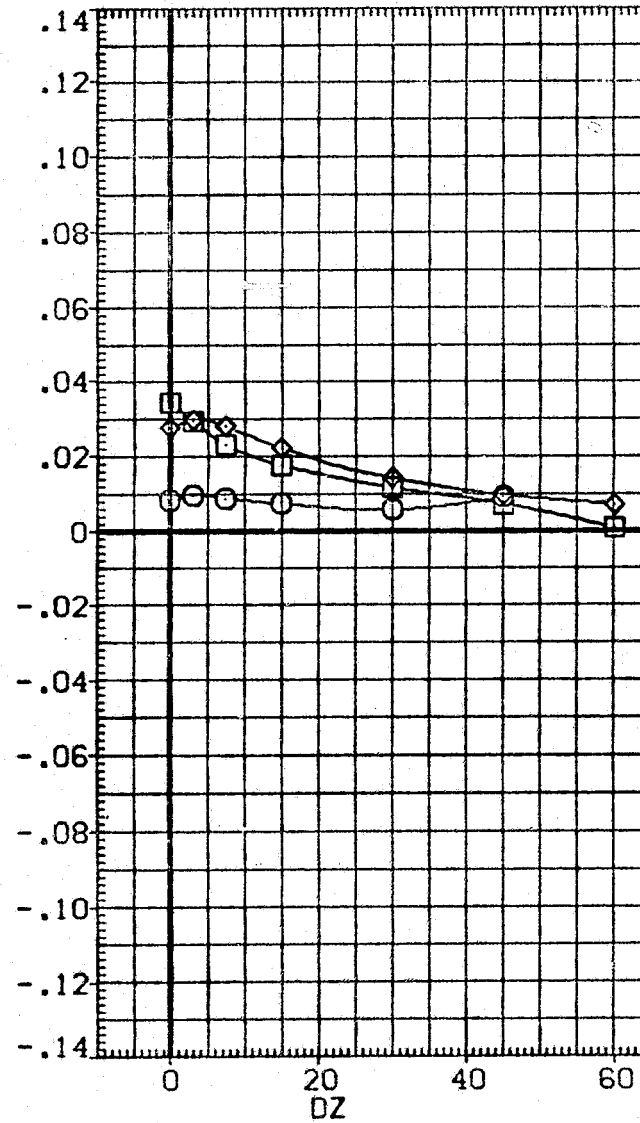
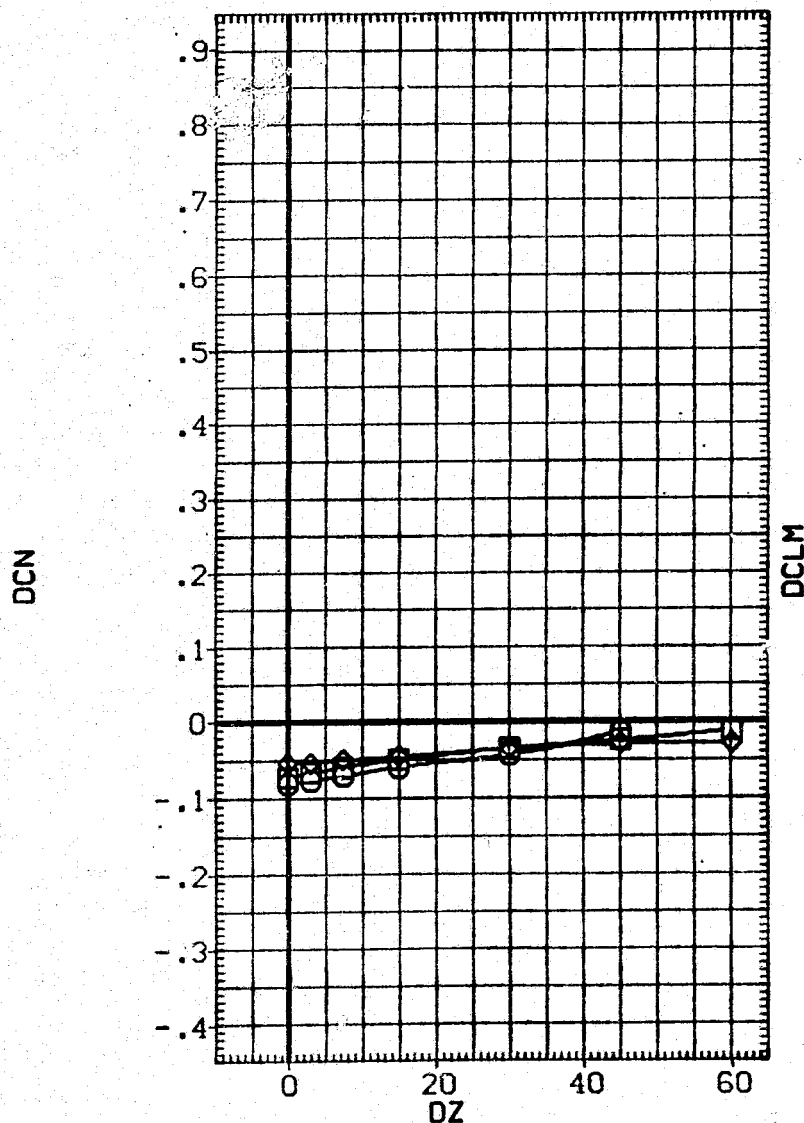


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/3 (051 - 010) (46N051)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC	REFERENCE INFORMATION
○	6.000	ALPHAC	.000	.000	SREF 2690.0000 SQ.FT.
□	10.000	ELV-18	.000	3.000	LREF 474.8100 IN.
◇	14.000	ELEVON	5.000	MACH .600	BREF 936.6800 IN.
		PHI	.000	DX 20.000	XMRP 1109.0000 IN.X0
		DY	.000	BETA0 .000	YMRP .0000 IN.Y0
					ZMRP 375.0000 IN.Z0
					SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

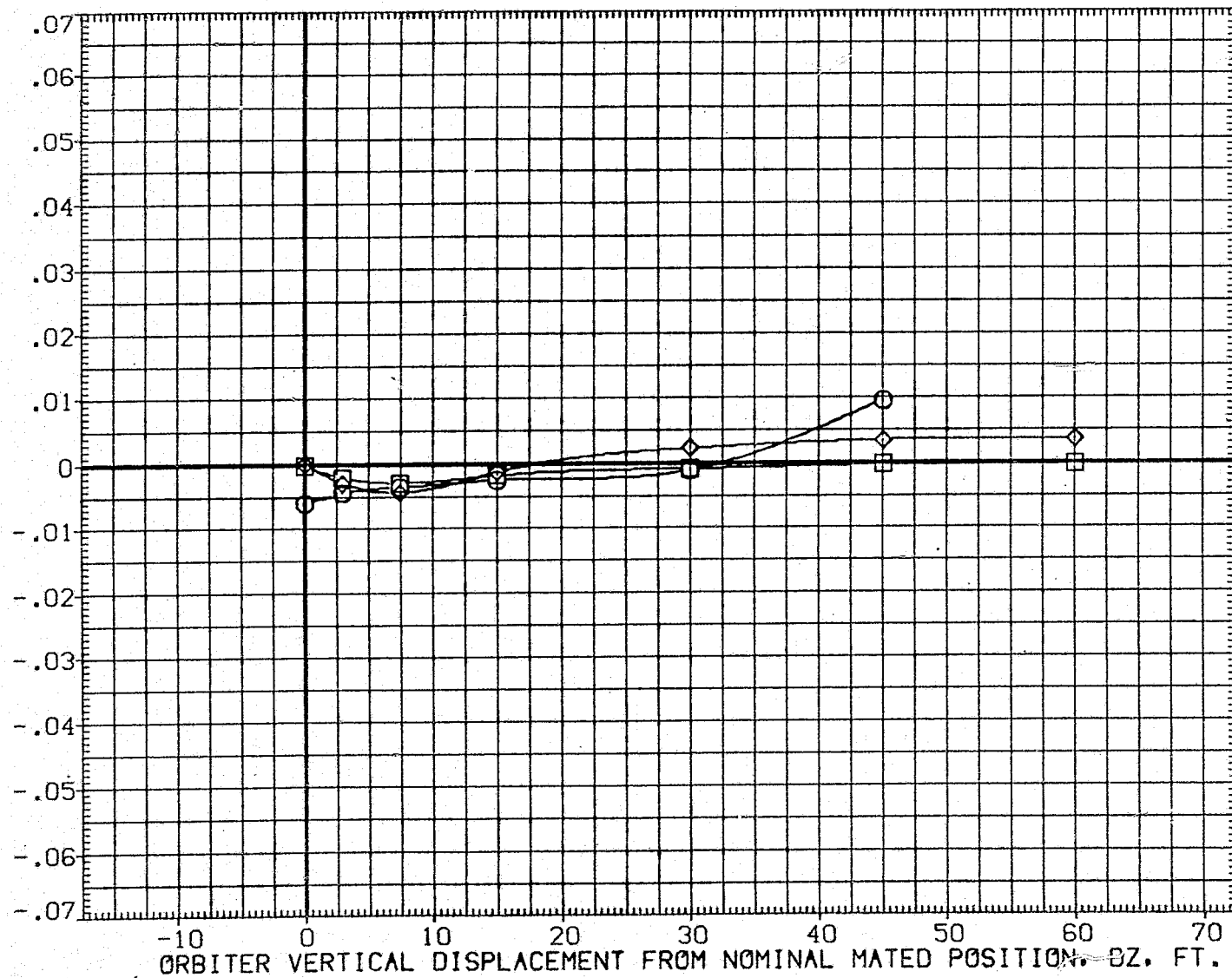


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	BETAC	
○	6.000	.000	.000	
□	10.000	.000	ELV-08	3.000
◇	14.000	5.000	MACH	.600
		PHI	DX	20.000
		DY	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

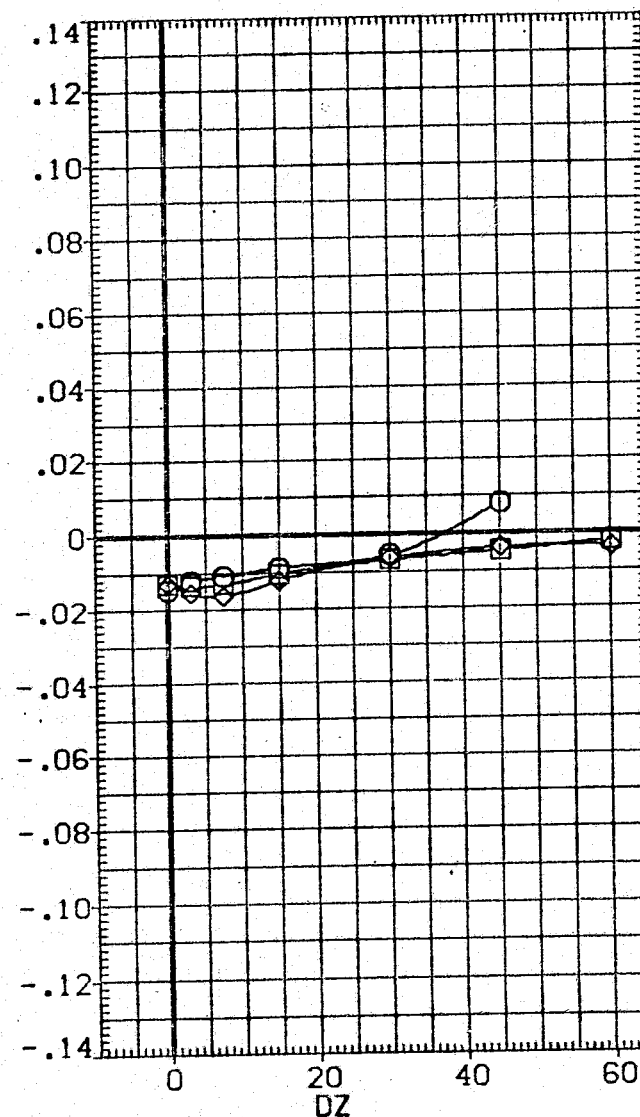
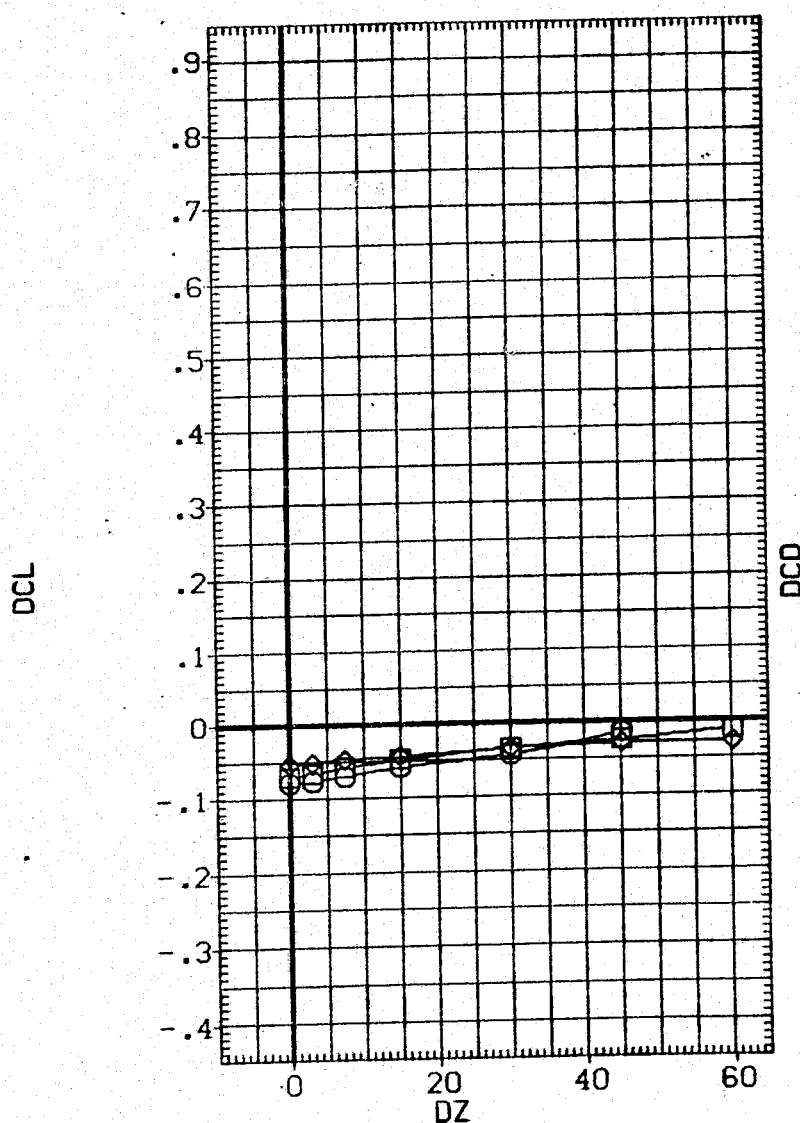


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN054)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ELV-1B .000 ELV-0B 3.000
□	10.000	ELEVON 5.000 MACH .600
◇	14.000	BETA0 .000 PHI .000
		DY .000 BETAC .000
		DX 20.000 ALPHAC 4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

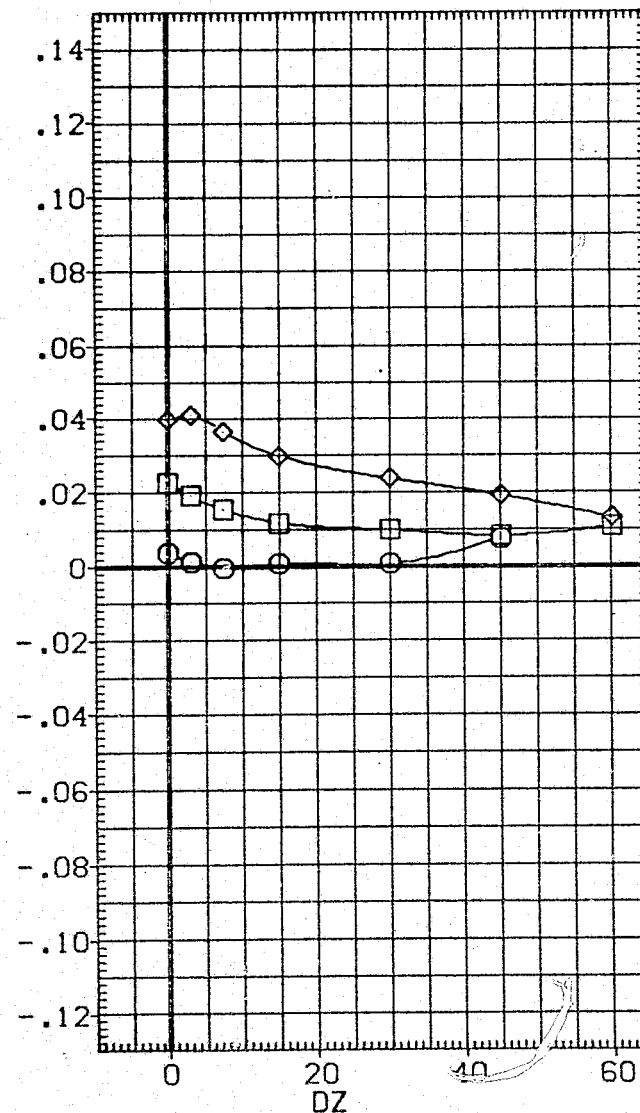
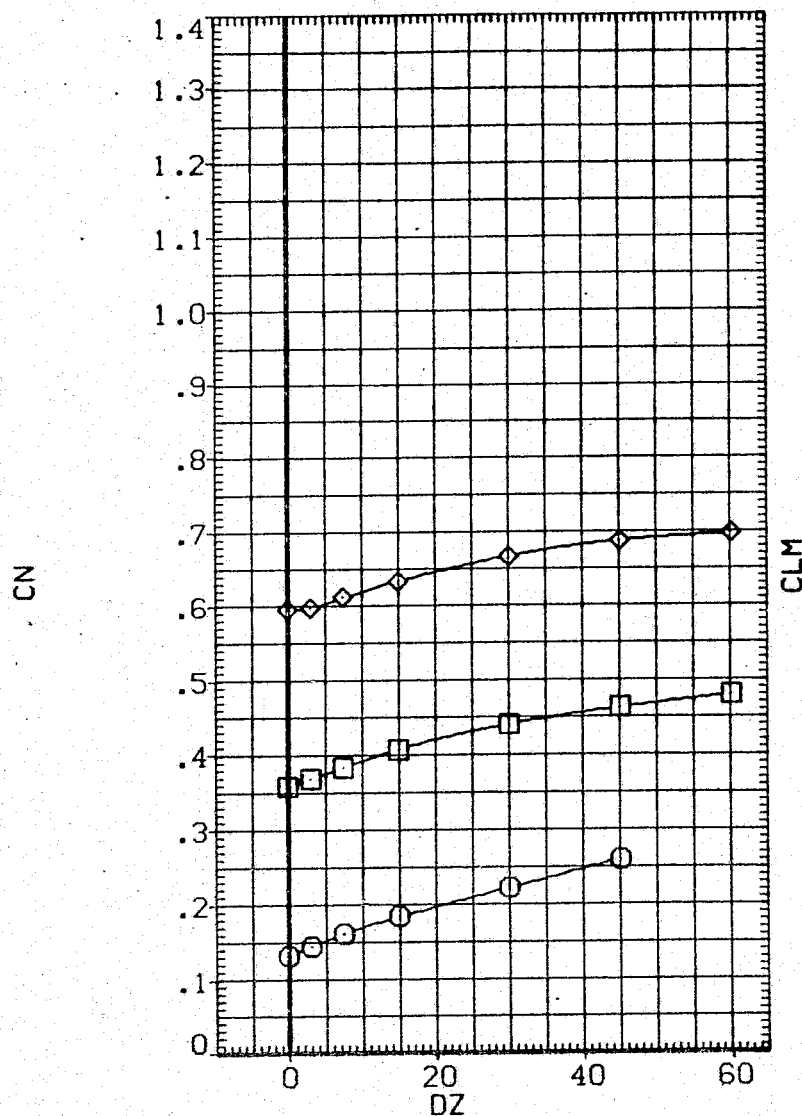


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	6.000		.000	3.000	
□	10.000	ELEVON	5.000	MACH	.600
◇	14.000	BETA0	.000	PHI	.000
		DY	.000	BETAC	.000
		DX	20.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

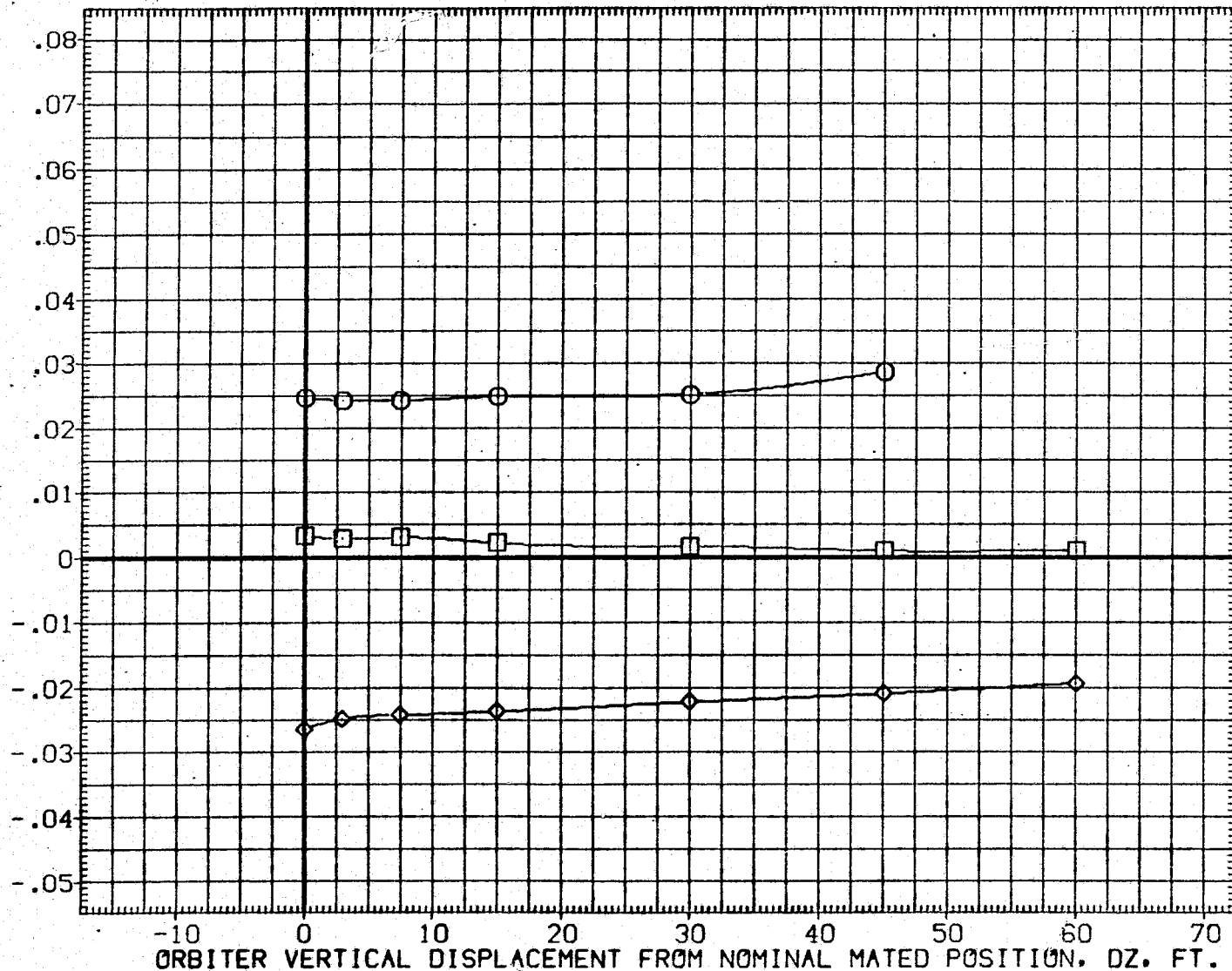


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(2GN054)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ELV-1B .000 ELV-0B 3.000
□	10.000	ELEVON 5.000 MACH .600
◇	14.000	BETA0 .000 PHI .000
	DY .000	BETAC .000
	DX 20.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

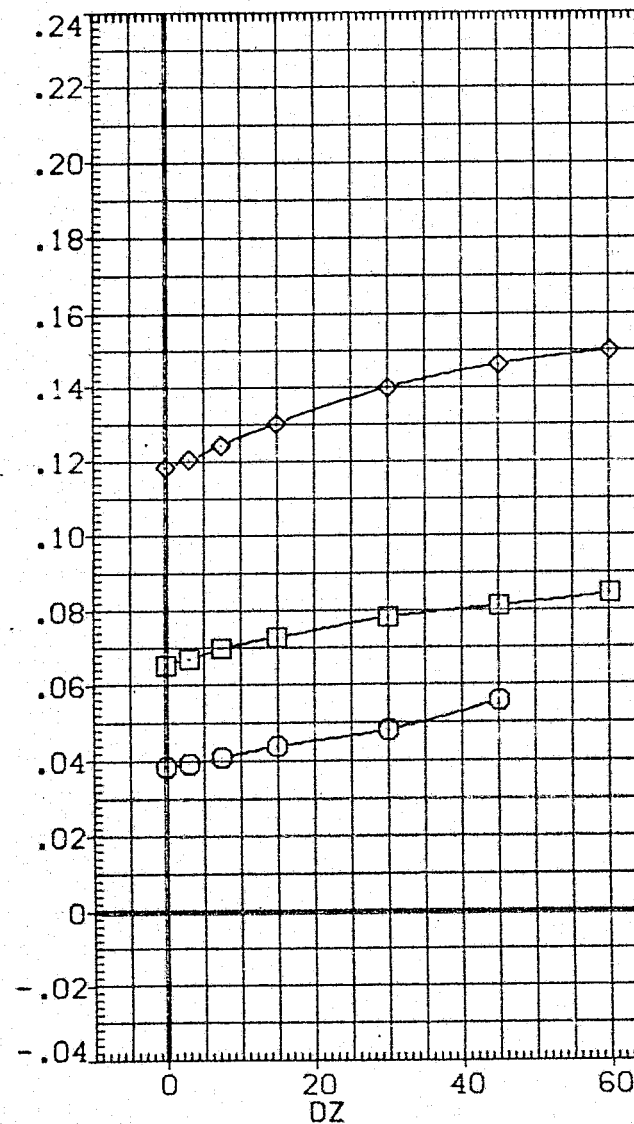
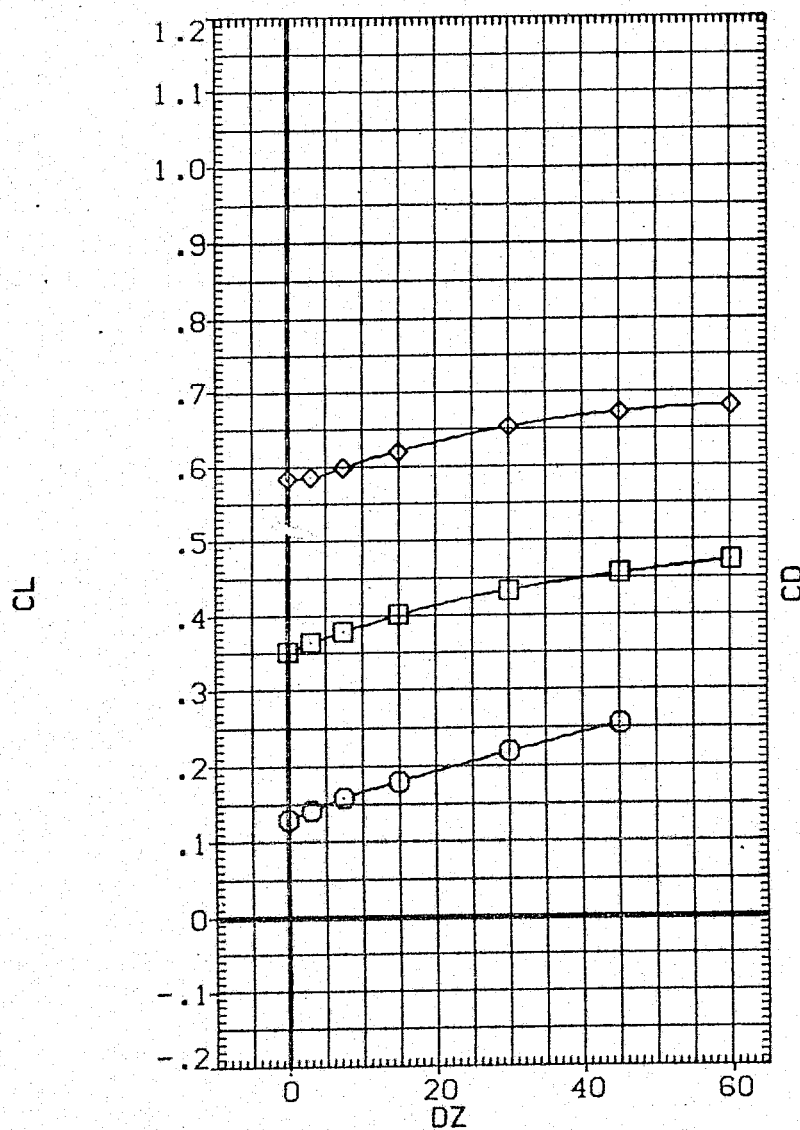


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC	VALUES	
○	6.000	.000	ELV-0B	3.000	
□	10.000	5.000	MACH	.600	
◇	14.000	.000	PHI	.000	
		.000	BETAC	.000	
		20.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

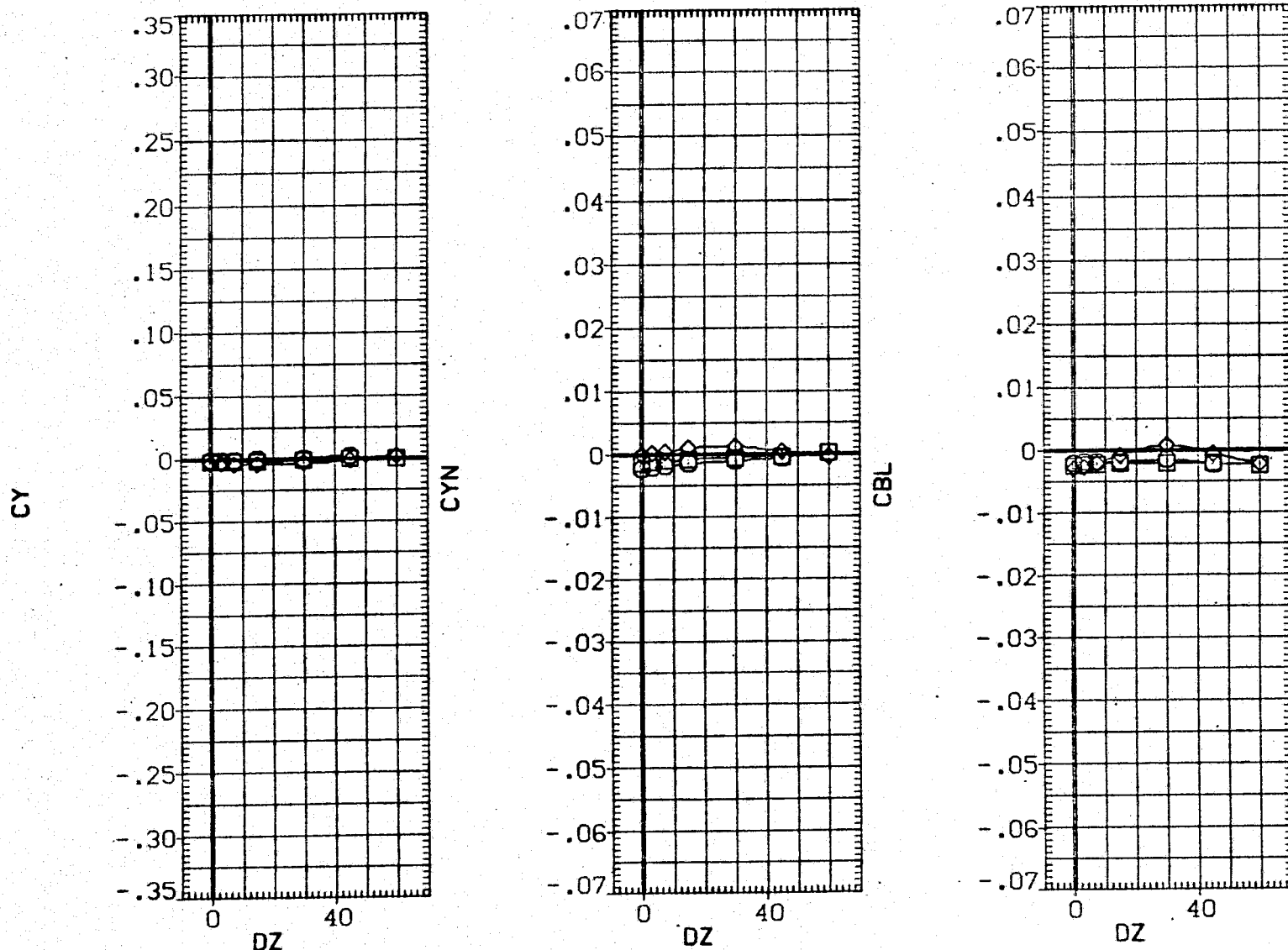


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (054 - 010) (46N054)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 4.000 BETAC .000
□	10.000	ELV-1B .000 ELV-0B 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX 20.000
		DY .000 BETA0 .000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

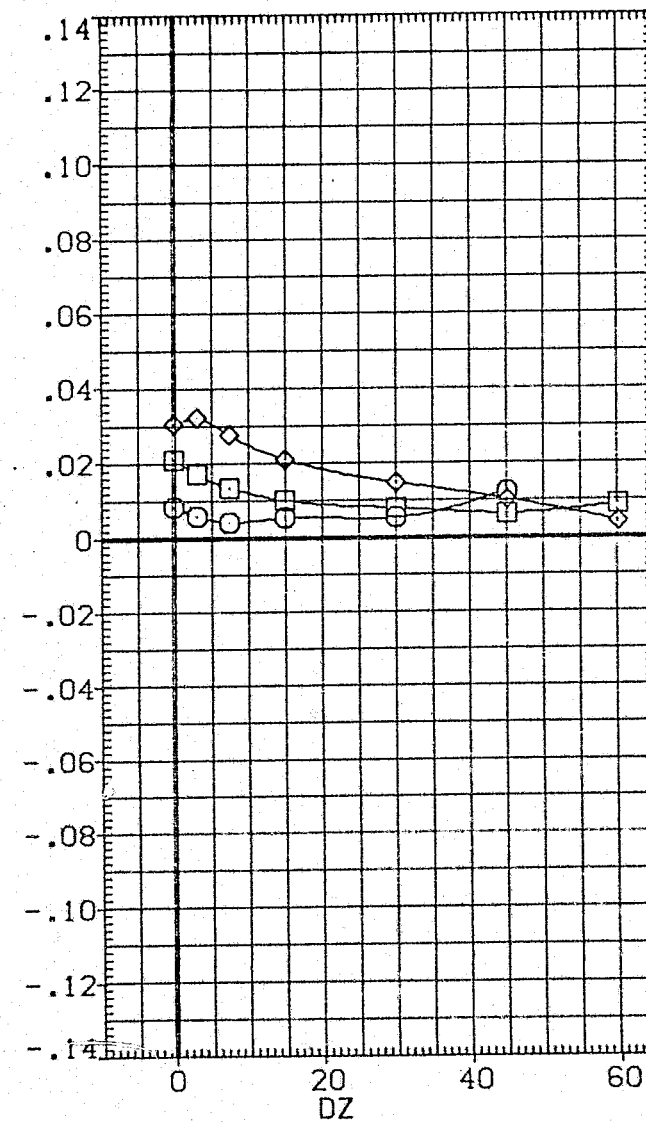
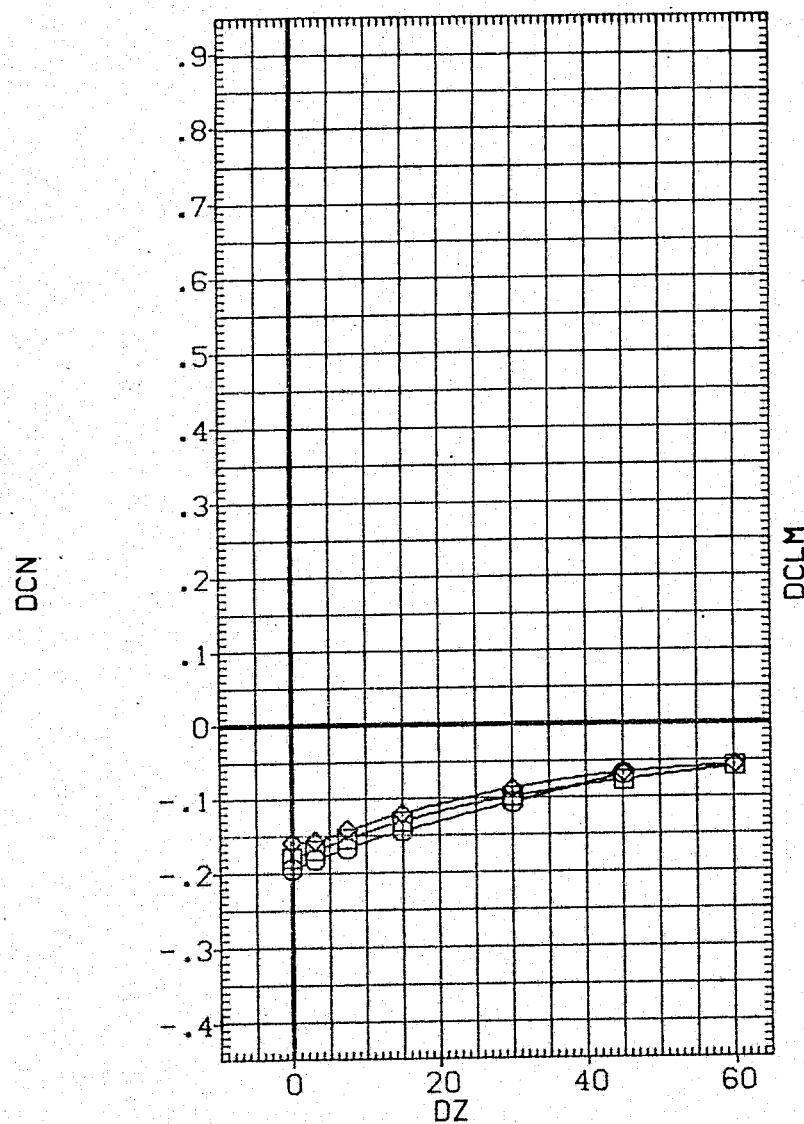


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 4.000 BETAC .000
□	10.000	ELV-1B .000 ELV-0B 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX 20.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

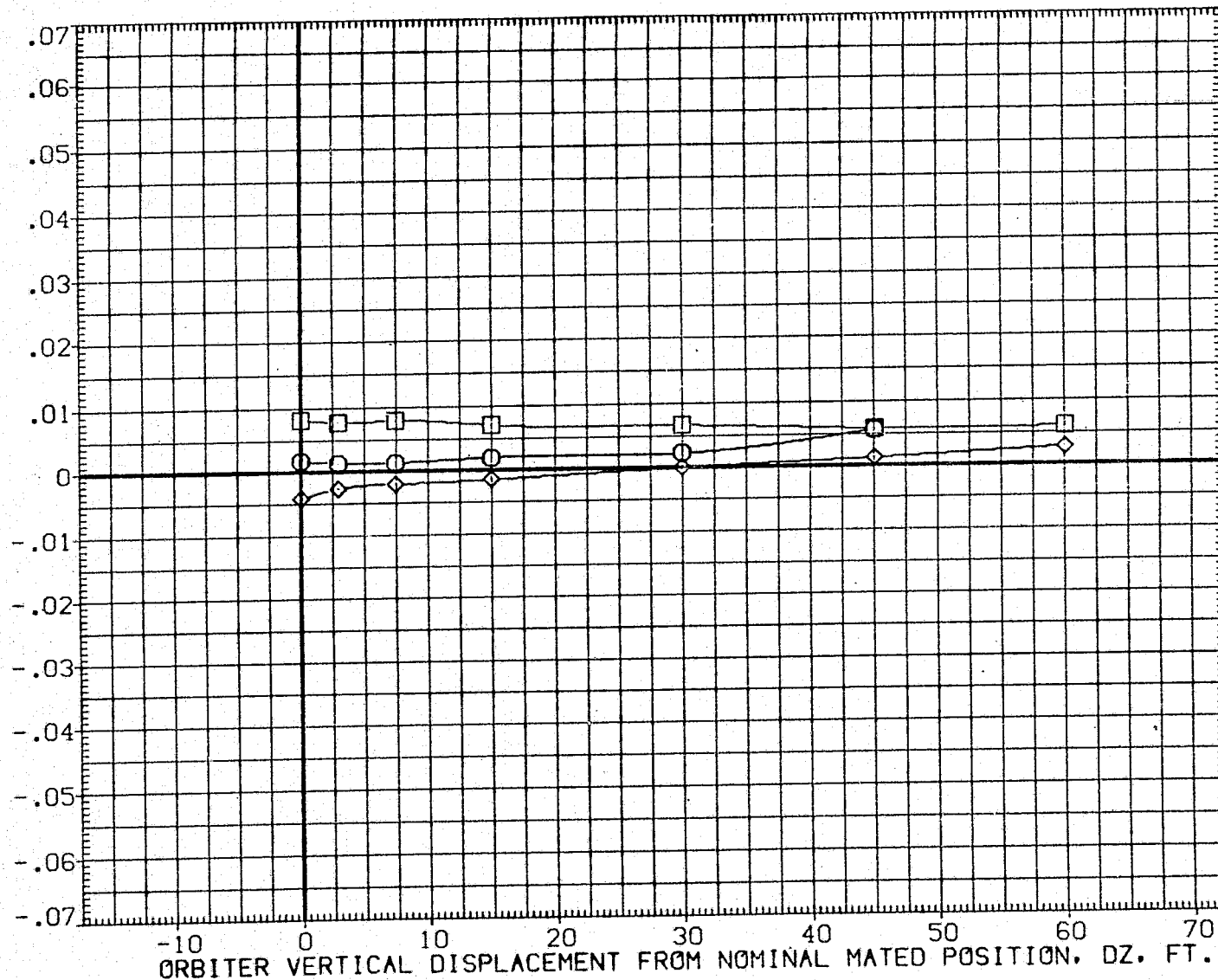


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (054 - 010)(46N054)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 4.000 BETAC .000
□	10.000	ELV-1B .000 ELV-0B 3.000
◇	14.000	ELEVON 5.000 HACH .600
		PHI .000 OX 20.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

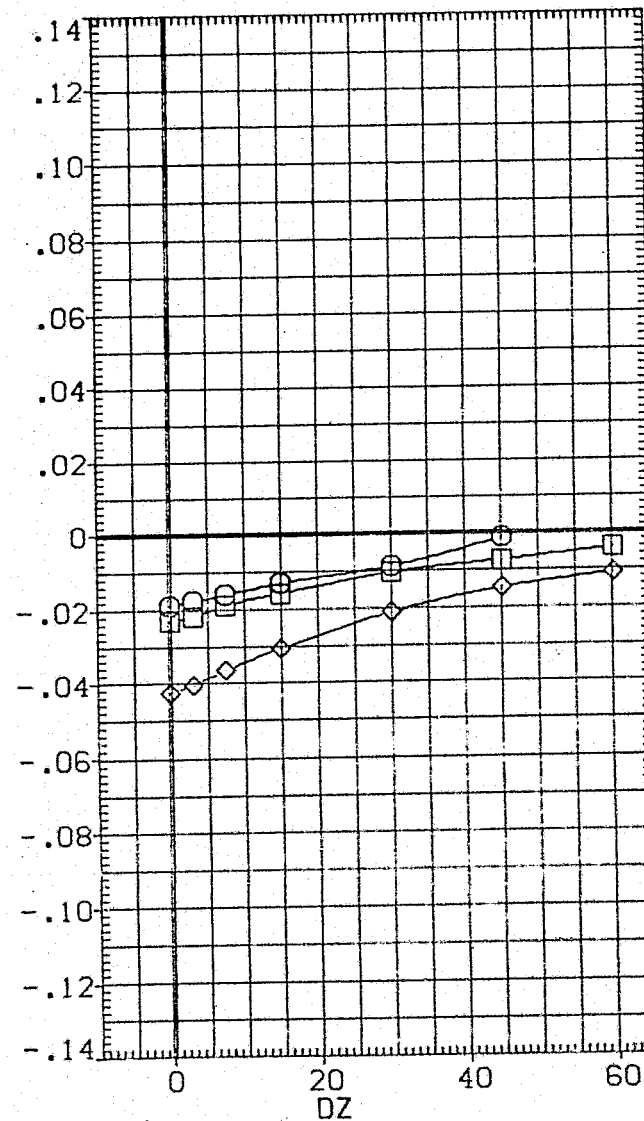
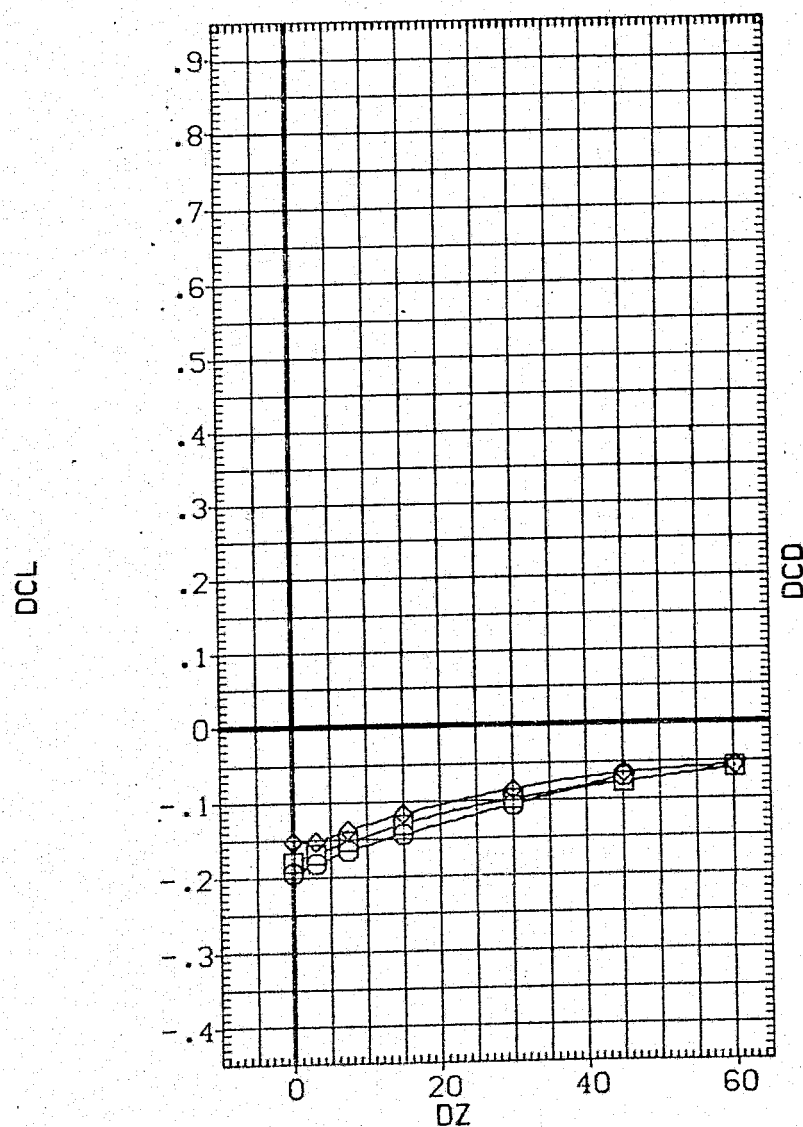


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	
○	6.000		.000	3.000	
□	10.000	ELEVON	5.000	MACH	.600
◇	14.000	BETA0	.000	PHI	.000
		DY	.000	BETAC	.000
		DX	20.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

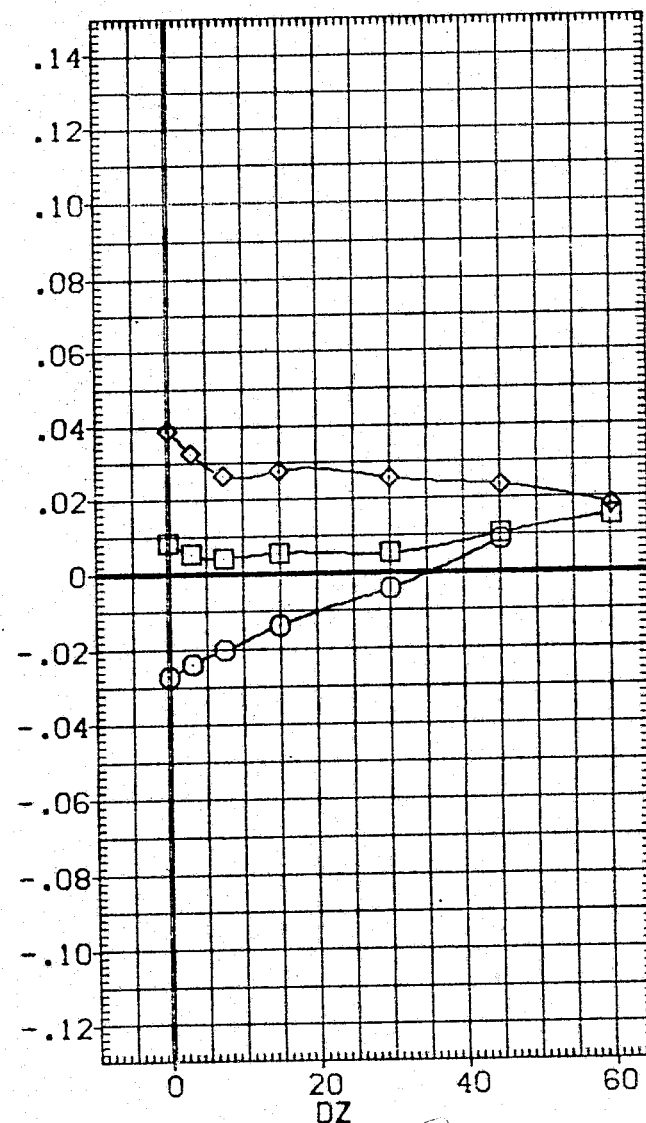
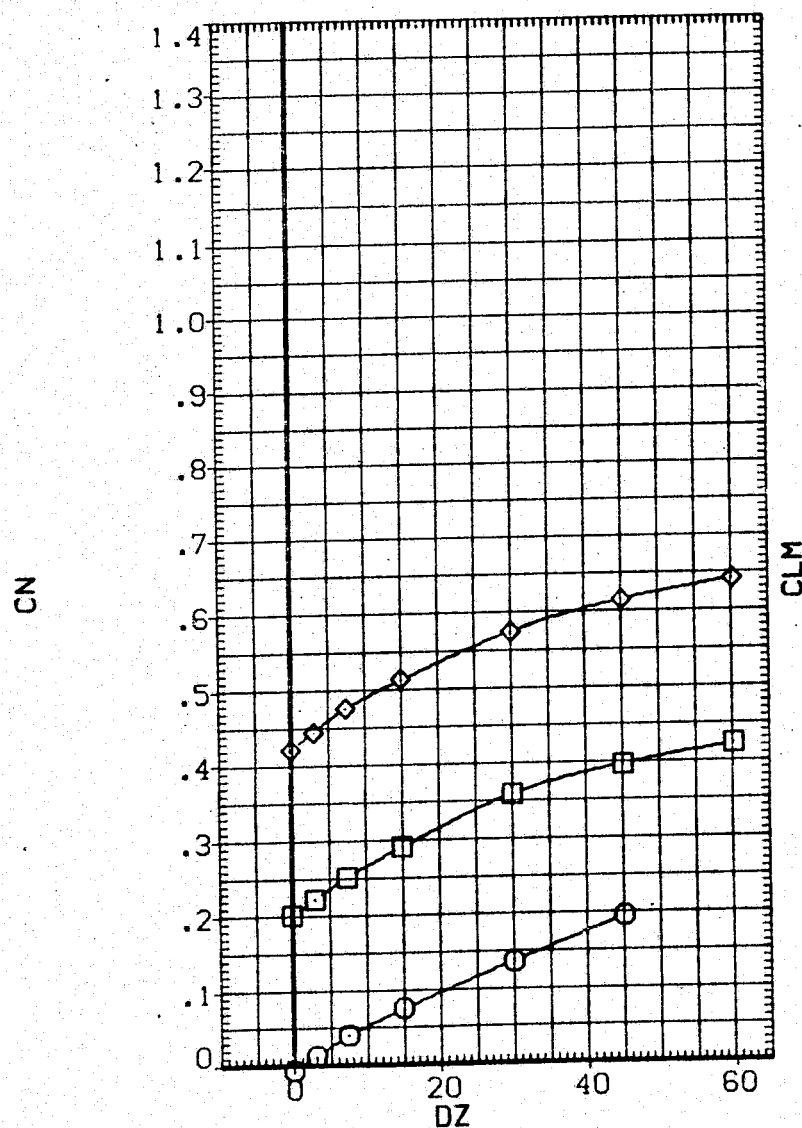


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(26N057)

SYMBOL

○
□
◇

ALPHA0

6.000

ELV-18

PARAMETRIC VALUES

.000

ELV-08

3.000

10.000 ELEVON

5.000

MACH

.600

14.000 BETA0

.000

PHI

.000

DY

.000

BETAC

.000

DX

20.000

ALPHAC

8.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

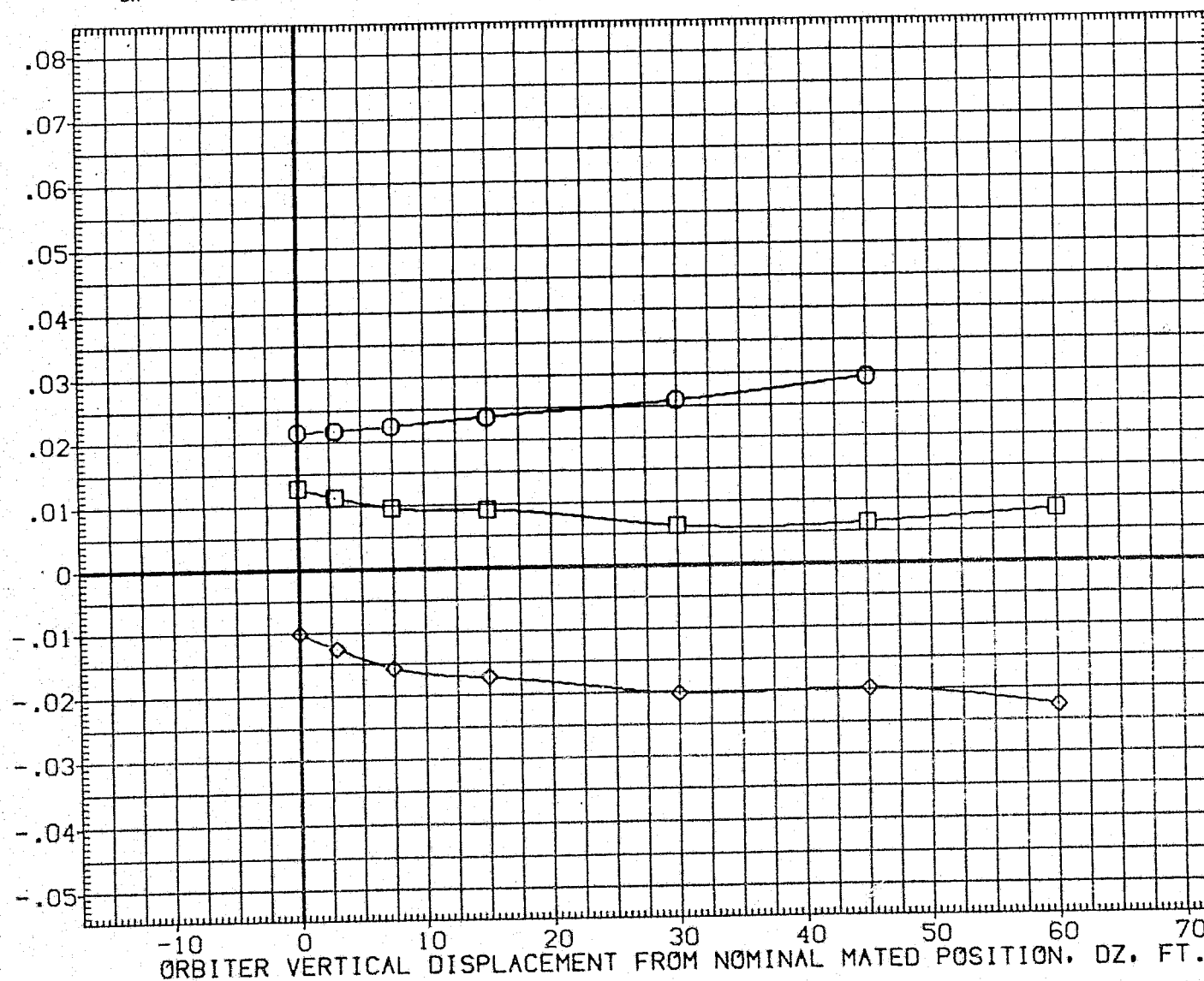


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	
○	6.000		.000	3.000	
□	10.000	ELEVON	5.000	MACH	.600
◇	14.000	BETA0	.000	PHI	.000
		DY	.000	BETAC	.000
		DX	20.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

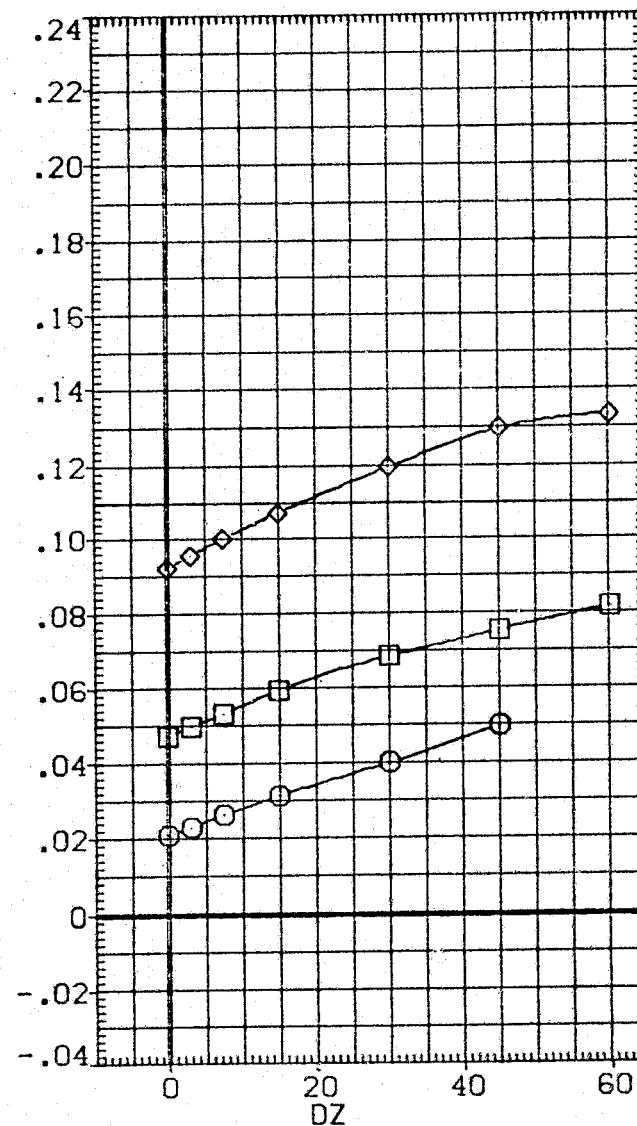
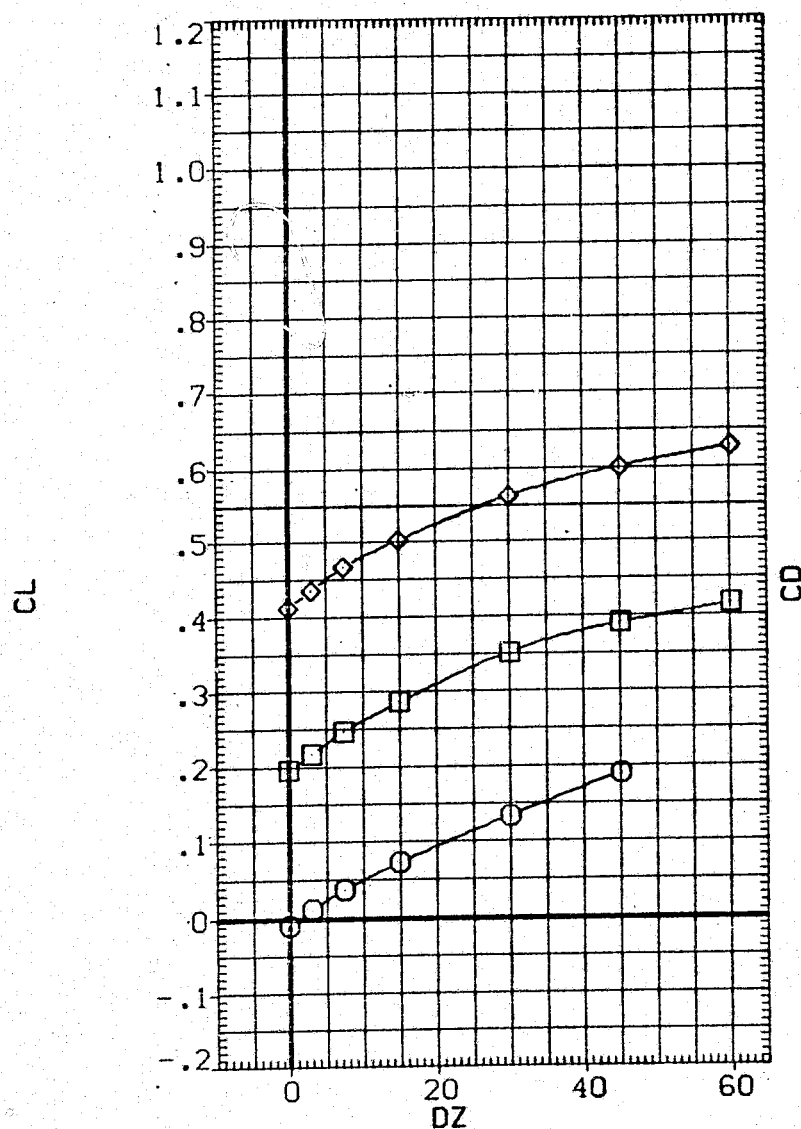


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (26N057)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	6.000	ELEVON	.000	MACH
□	10.000	BETA0	5.000	PHI
◇	14.000	DY	.000	BETAC
		DX	20.000	ALPHAC
				8.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

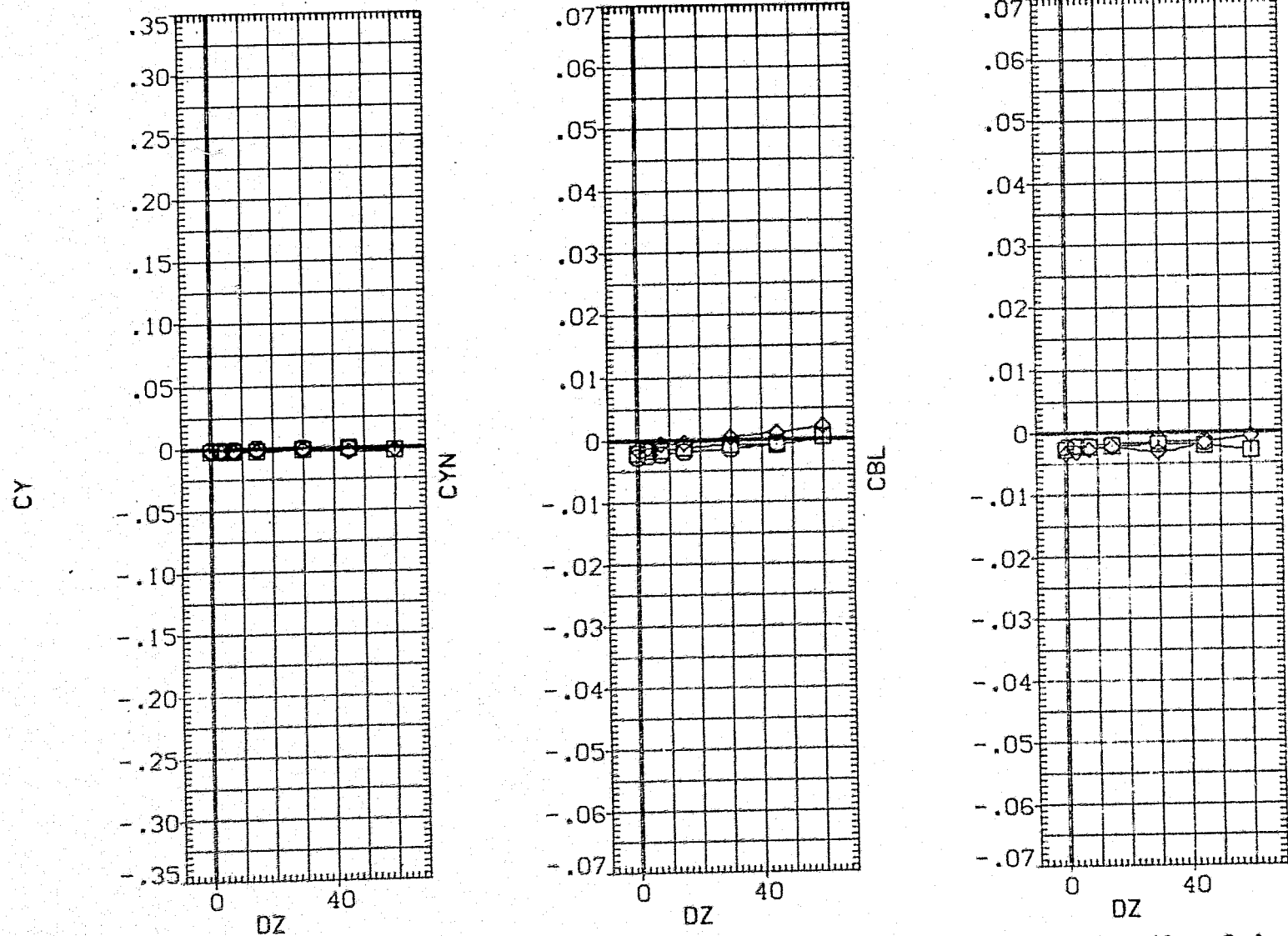


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	6.000	ALPHAC 8.000 BETAC .000
□	10.000	ELV-18 .000 ELV-08 3.000
◇	14.000	ELEVON 5.000 MACH .600
		PHI .000 DX 20.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

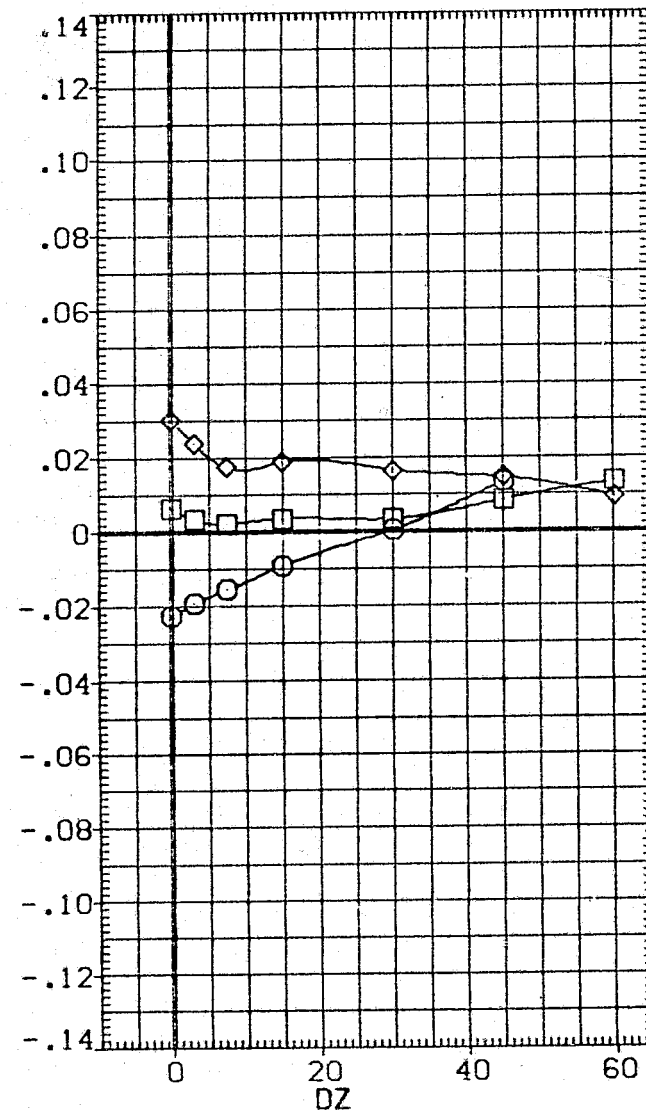
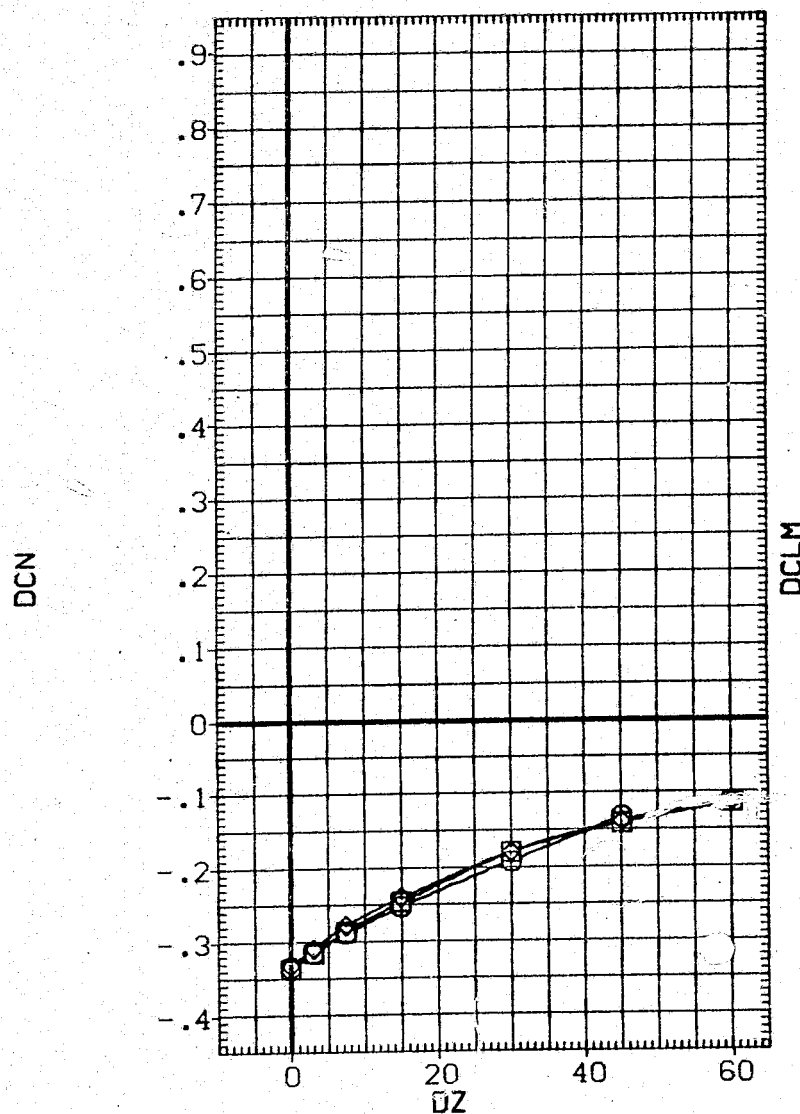


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (057 - 010)(4GN057)

SYMBOL

○
□
◇

ALPHA0

6.000

ALPHAC

PARAMETRIC VALUES

8.000

BETAC

.000

10.000

ELV-1B

.000

ELV-0B

3.000

14.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

20.000

DY

.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000 50.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

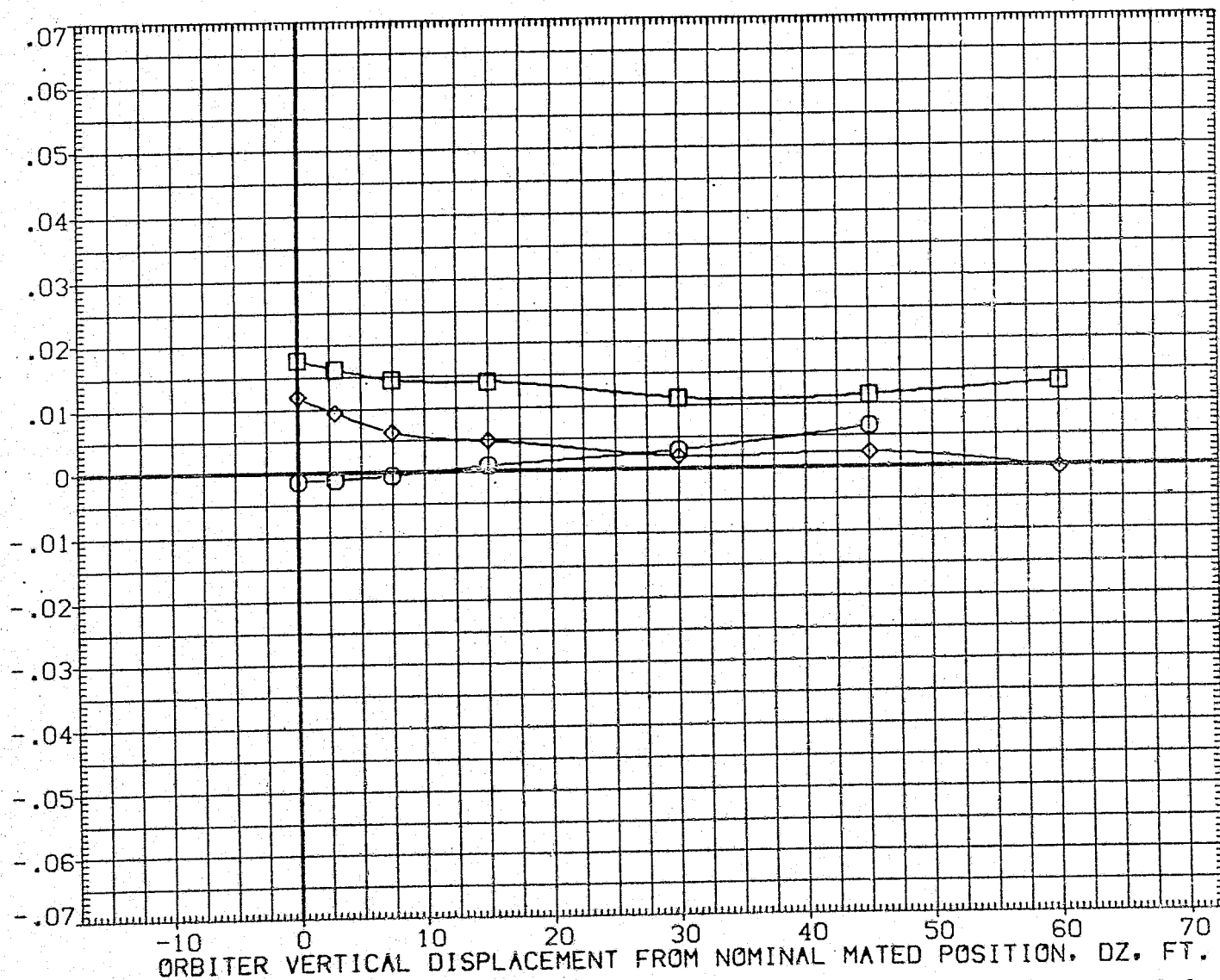


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□
◇

ALPHA0

6.000

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

20.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

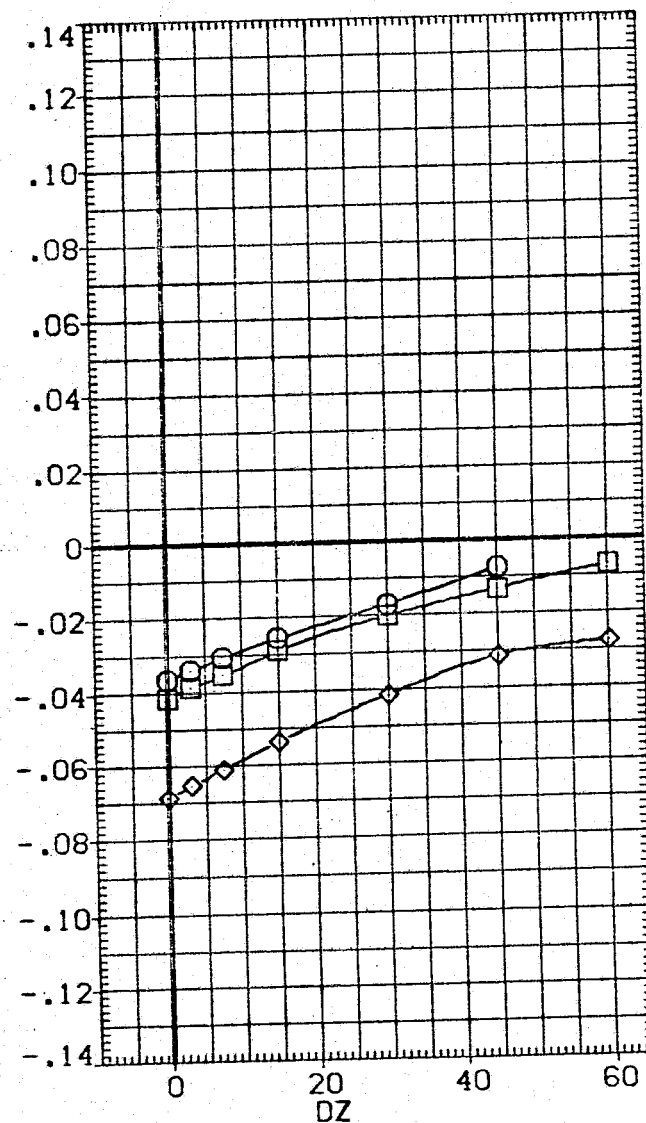
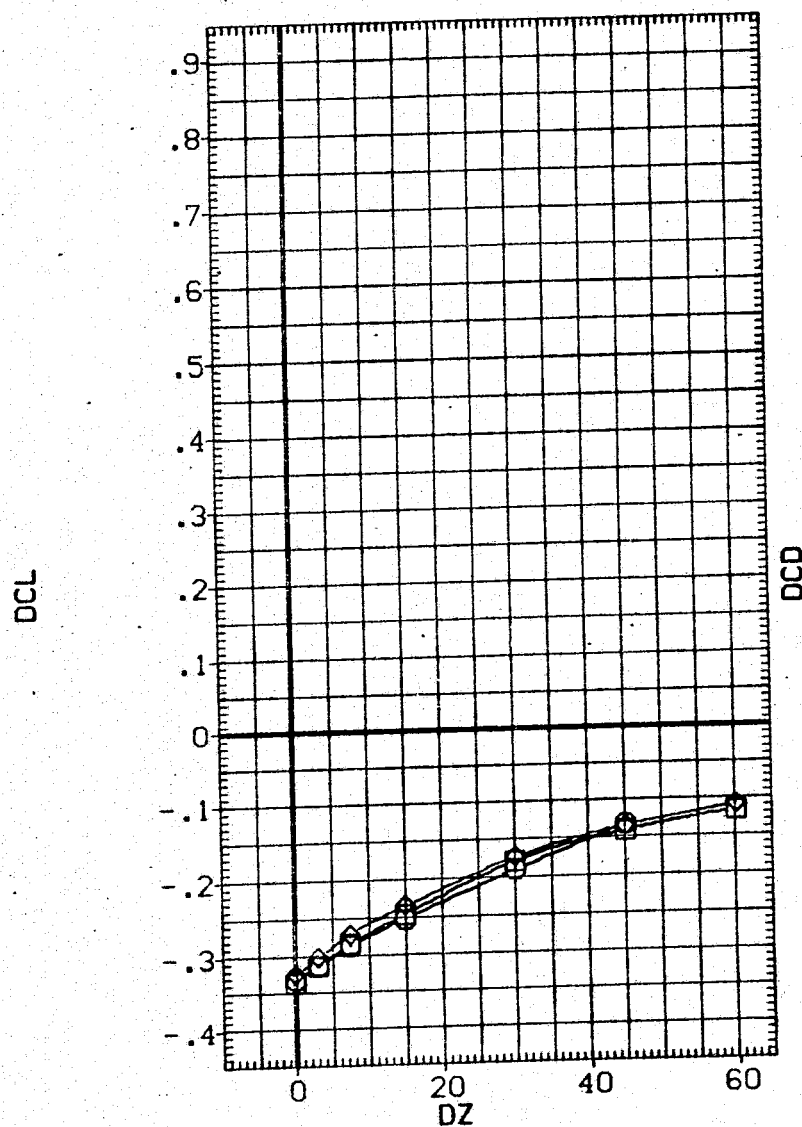


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN058)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI .000 DY 10.000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

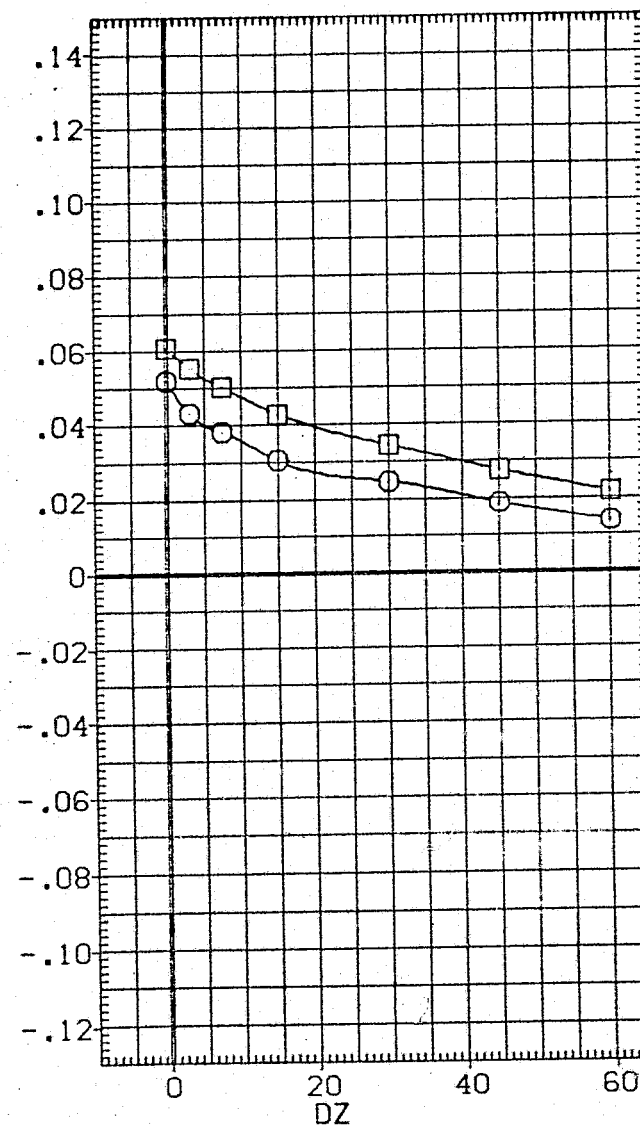
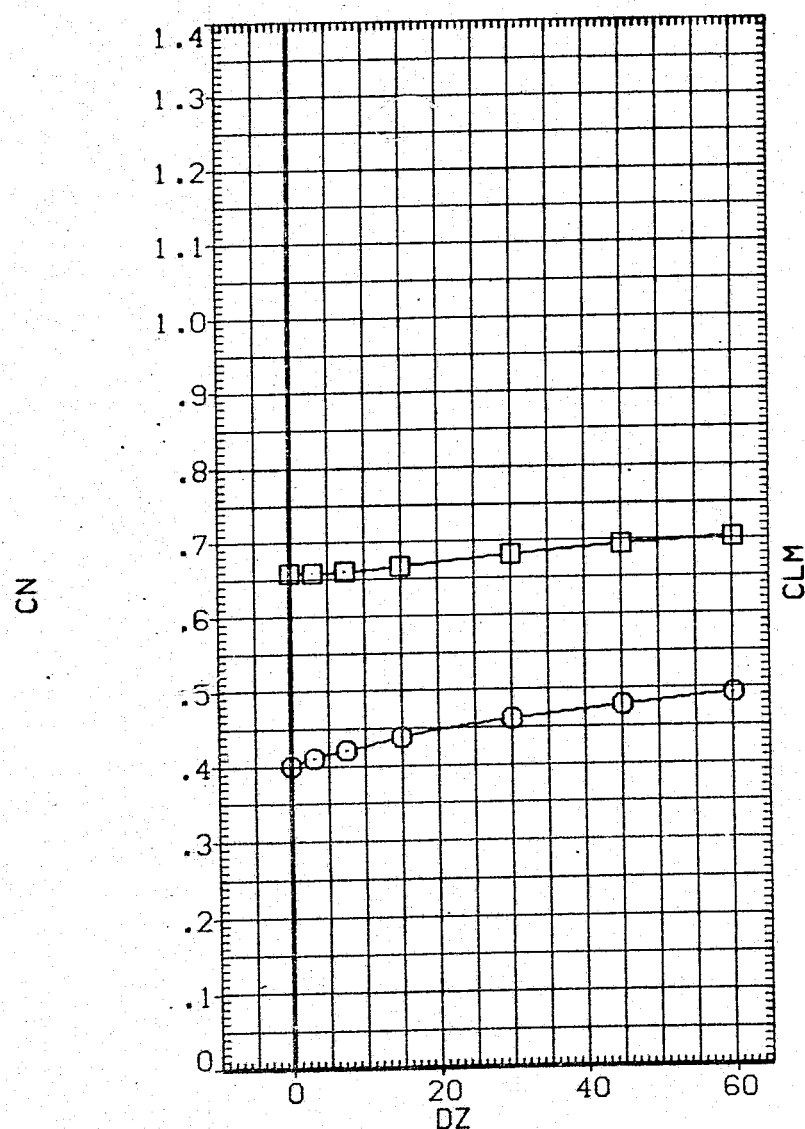


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-IB

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

.000

.000

ELV-OB

MACH

BETAC

DY

ALPHAC

3.000

.600

.000

10.000

4.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

AXIAL FORCE COEFFICIENT, CA

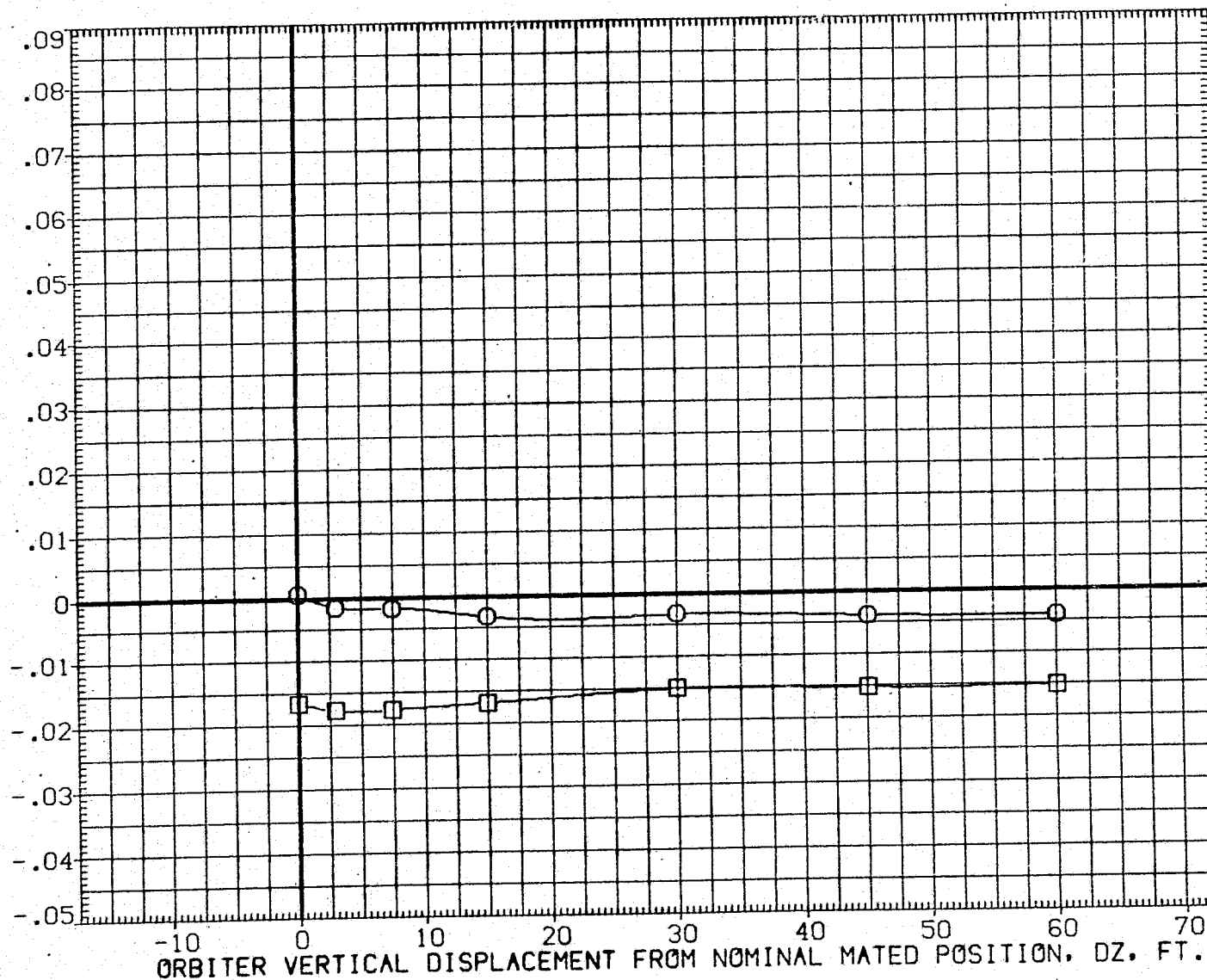


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN058)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	ELV-1B	.000	ELV-0B	3.000	
○	14.000	ELEVON	5.000	MACH	.600	
□		BETA0	.000	BETAC	.000	
		PHI	.000	DY	10.000	
		DX	.000	ALPHAC	4.000	

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

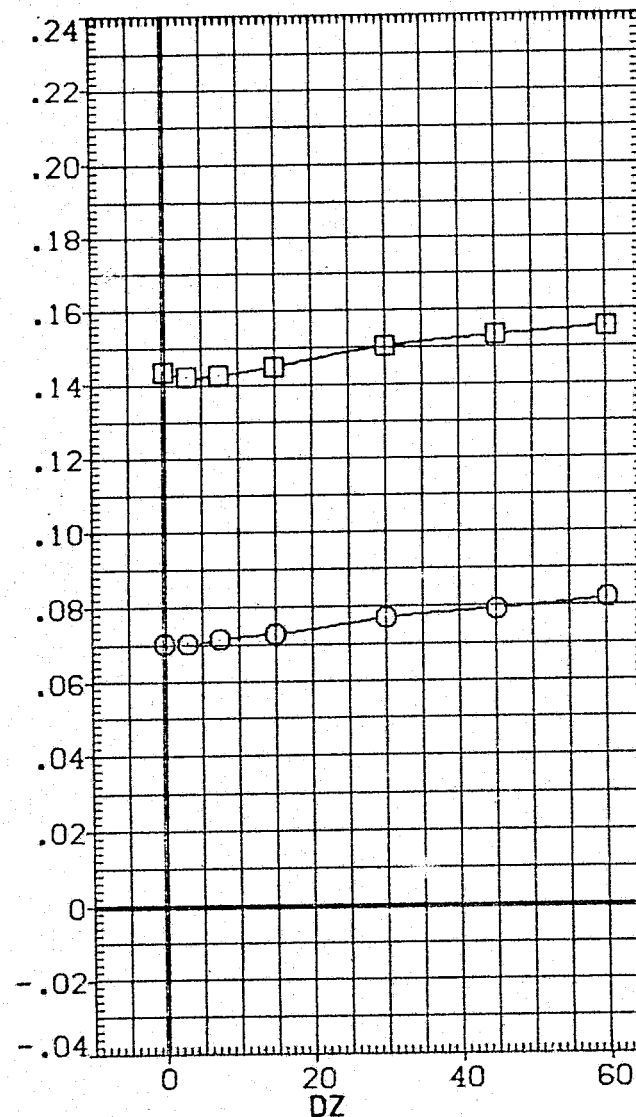
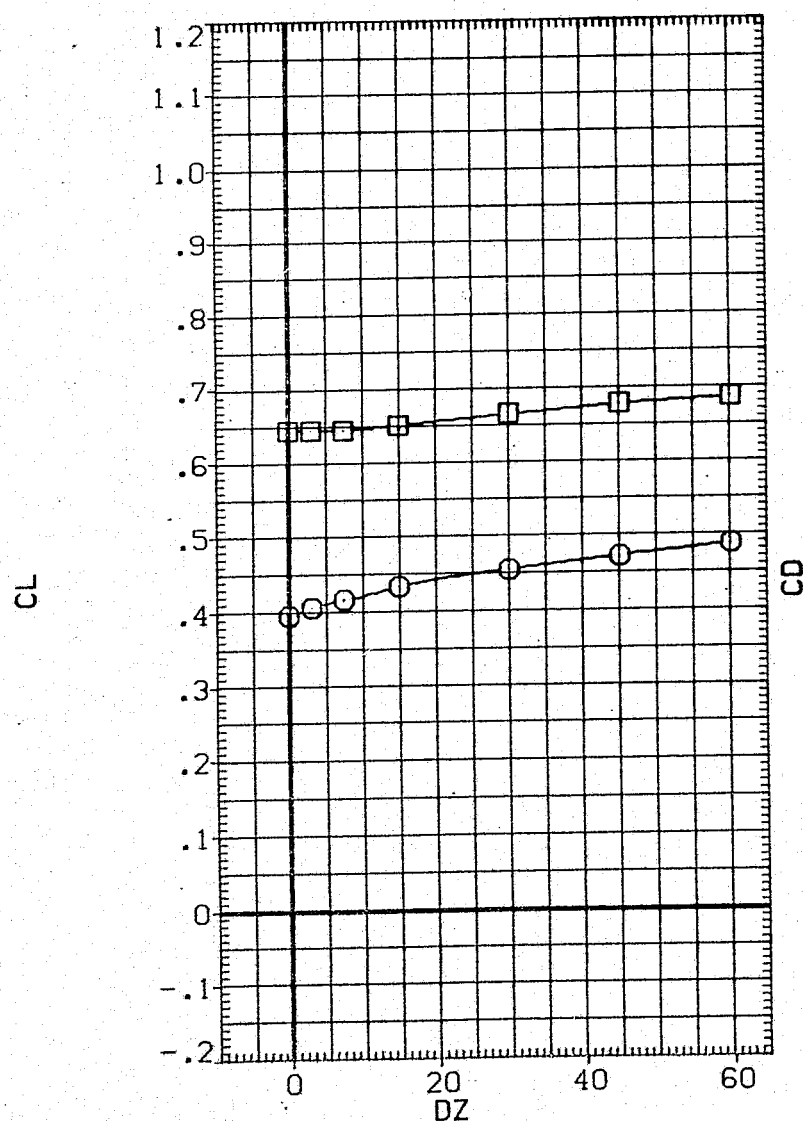


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN058)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	
○	10.000	.000	5.000	MACH	3.000
□	14.000	ELEV0N	.000	BETAC	.600
		BETA0	.000	DY	.000
		PHI	.000	ALPHAC	10.000
		DX	.000		4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

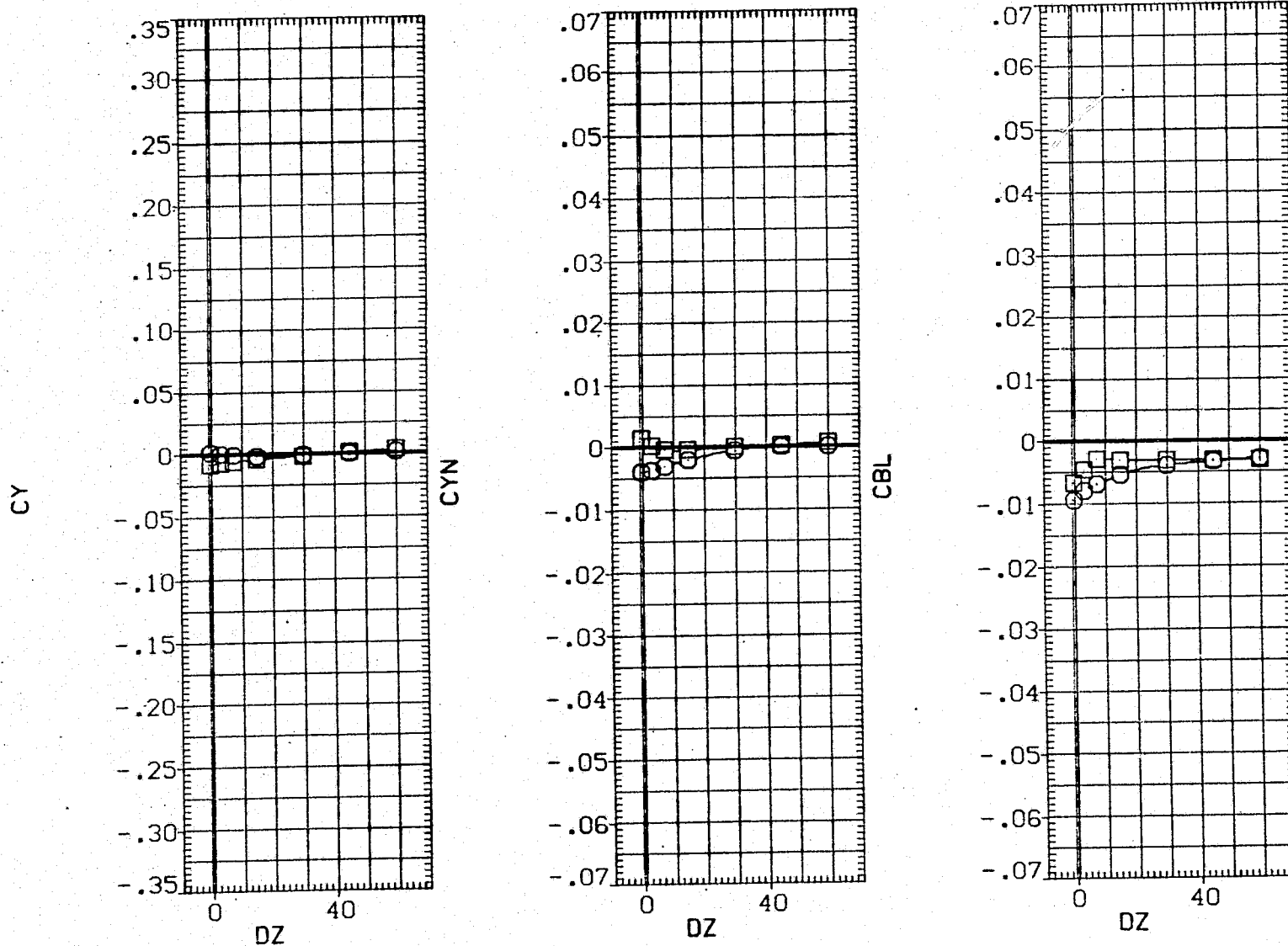


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (058 - 010) (VGN058)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	HACH	.600
		PHI	.000	Dx	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

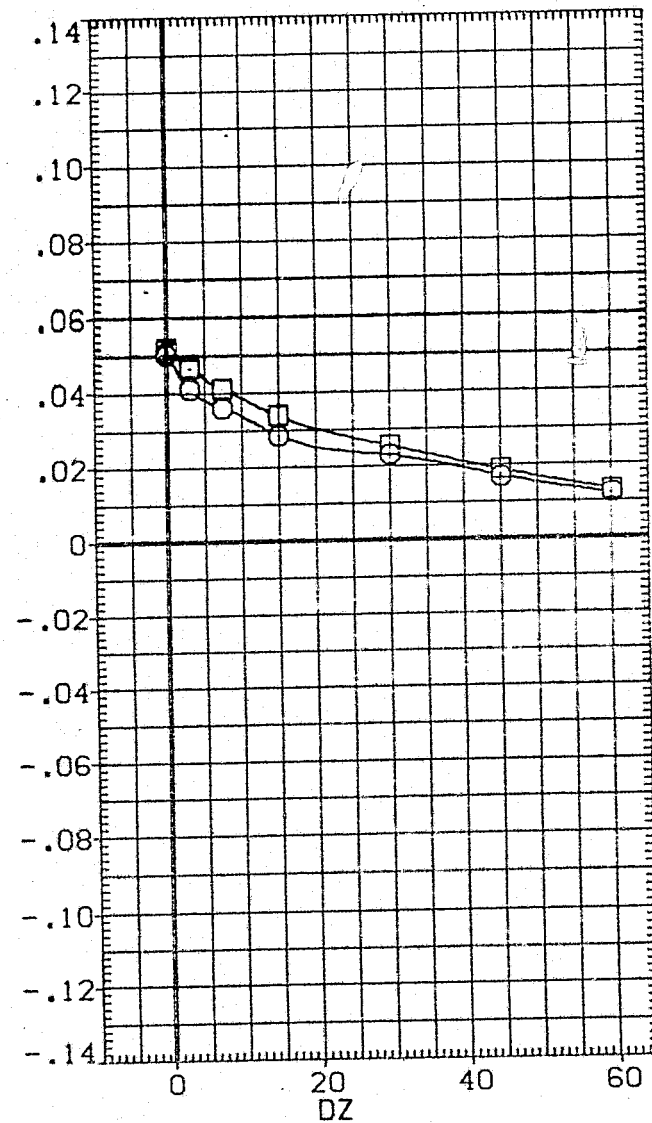
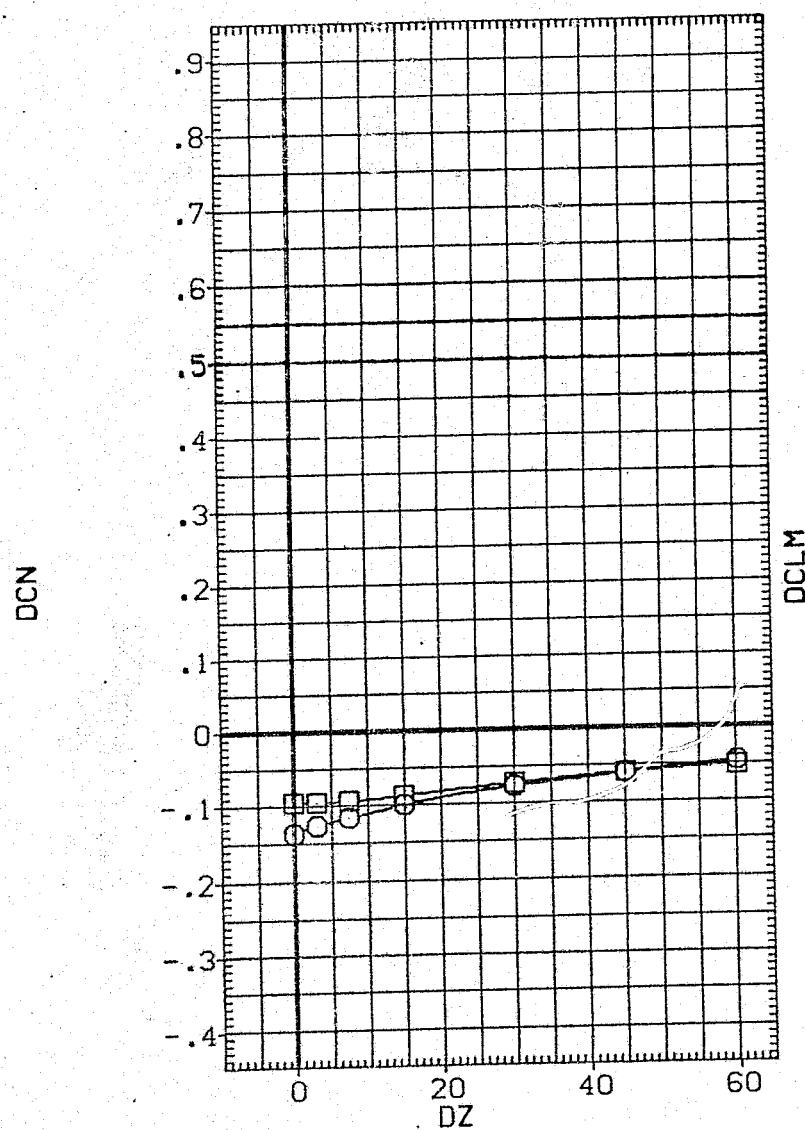


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

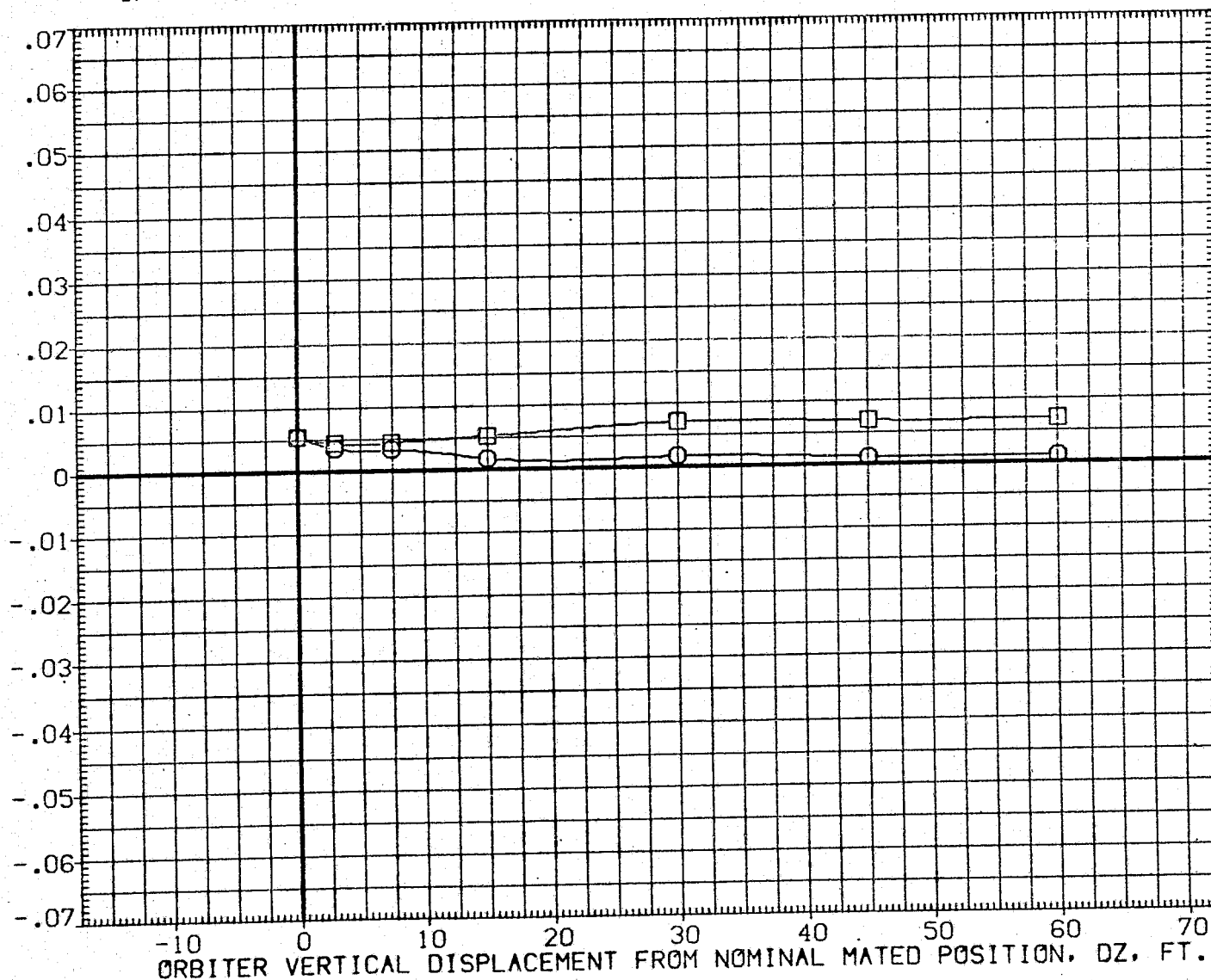


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (058 - 010)(VGN058)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

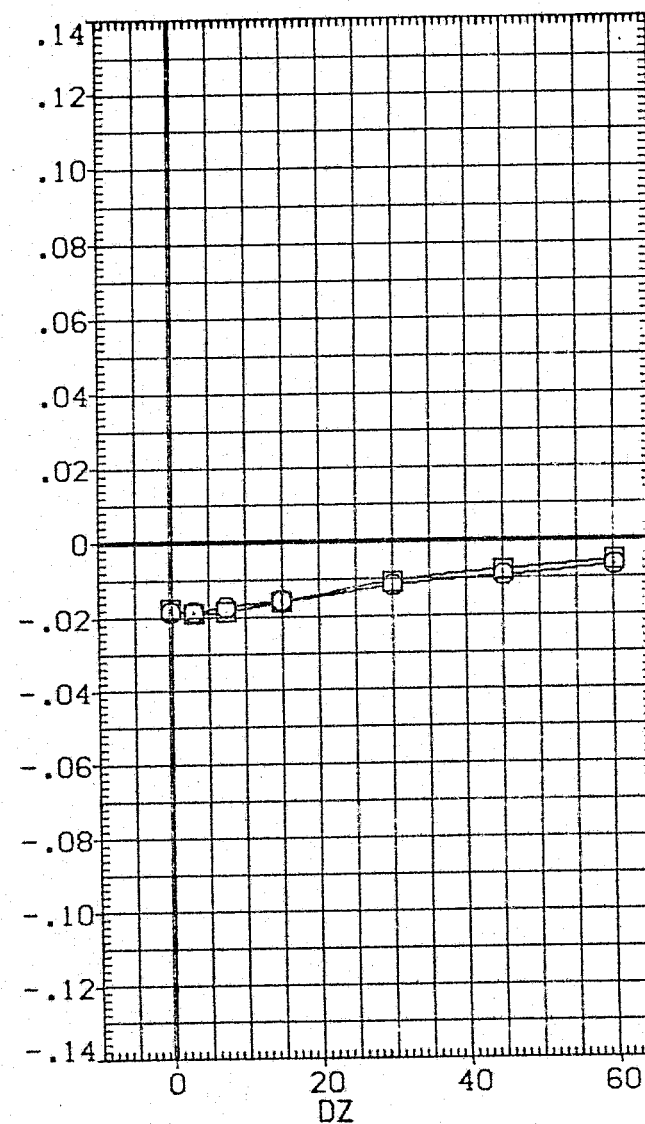
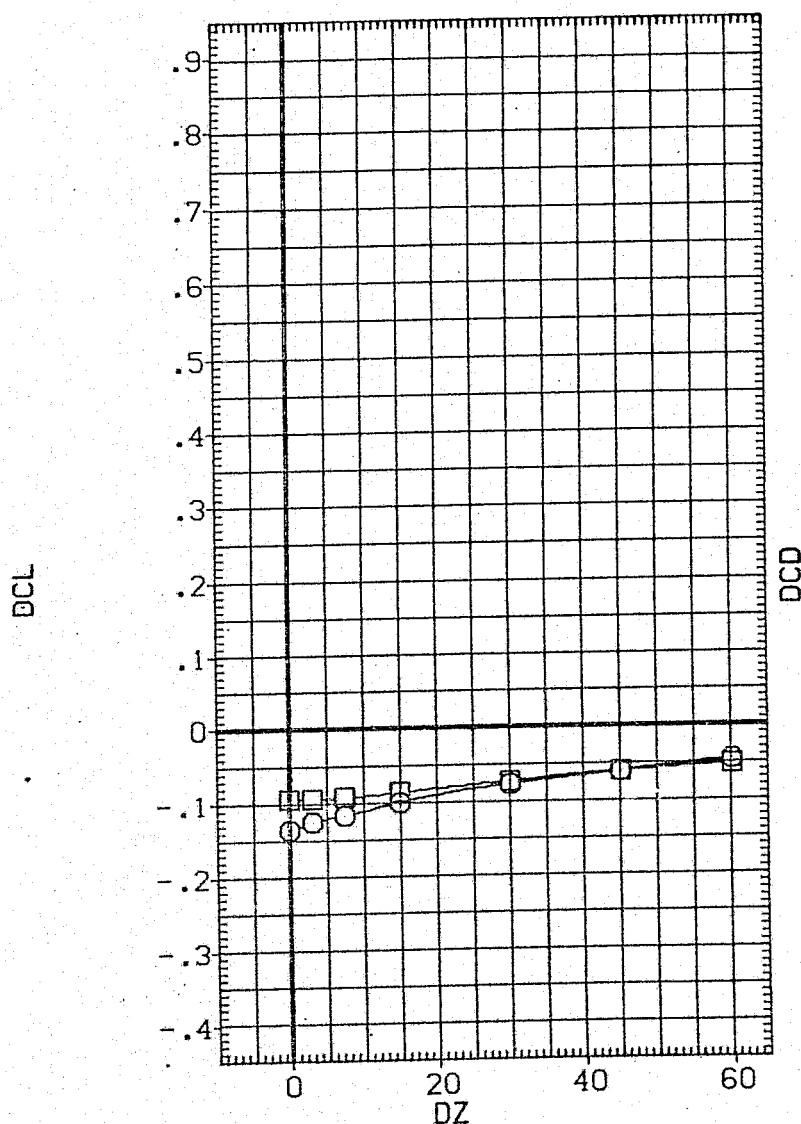


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN060)

SYMBOL	ALPHA0	PARAMETRIC VALUES		
○	10.000	ELV-1B .000	ELV-0B 3.000	
□	14.000	ELEVON 5.000	MACH .600	
		RETA0 .000	BETAC .000	
		PHI .000	DY 10.000	
		DX .000	ALPHAC 8.000	

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

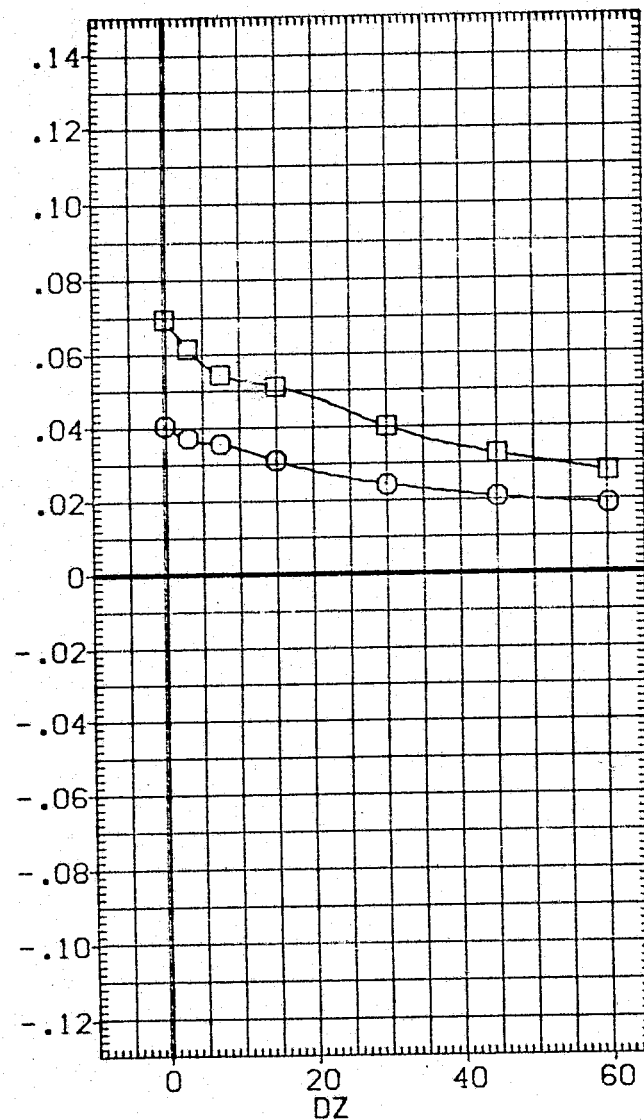
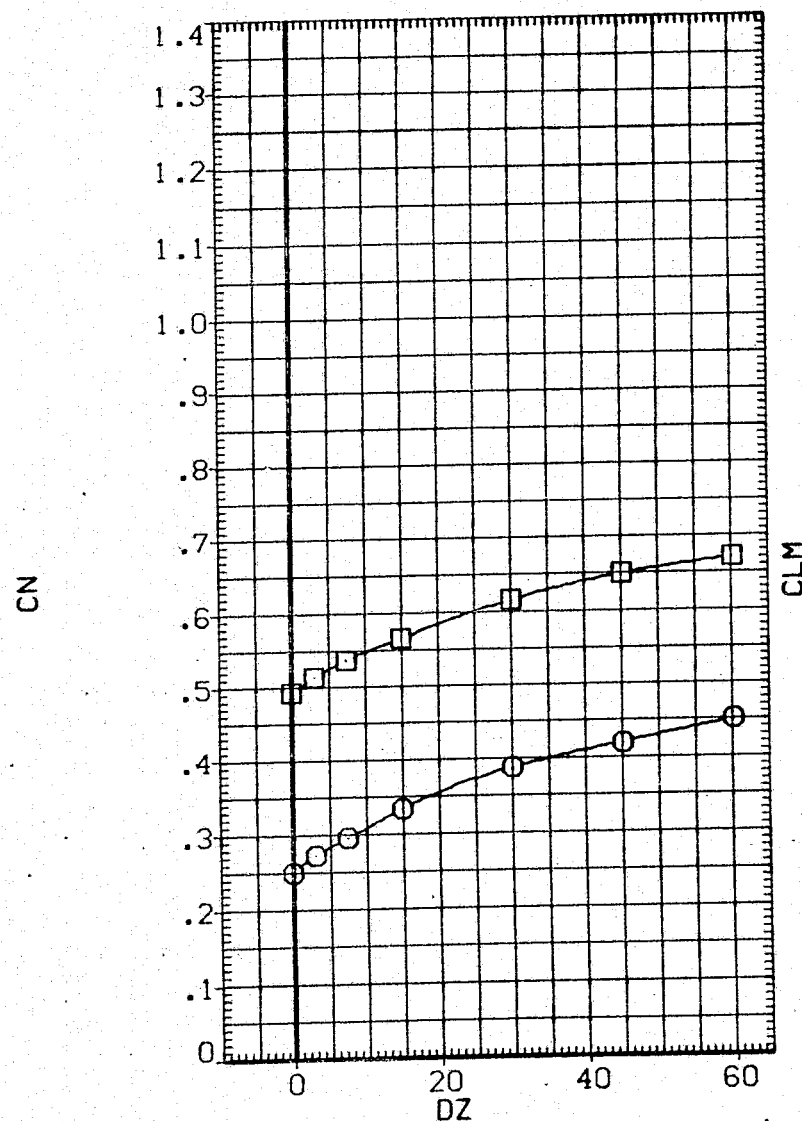


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN060)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	.000	DY	10.000
		OX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

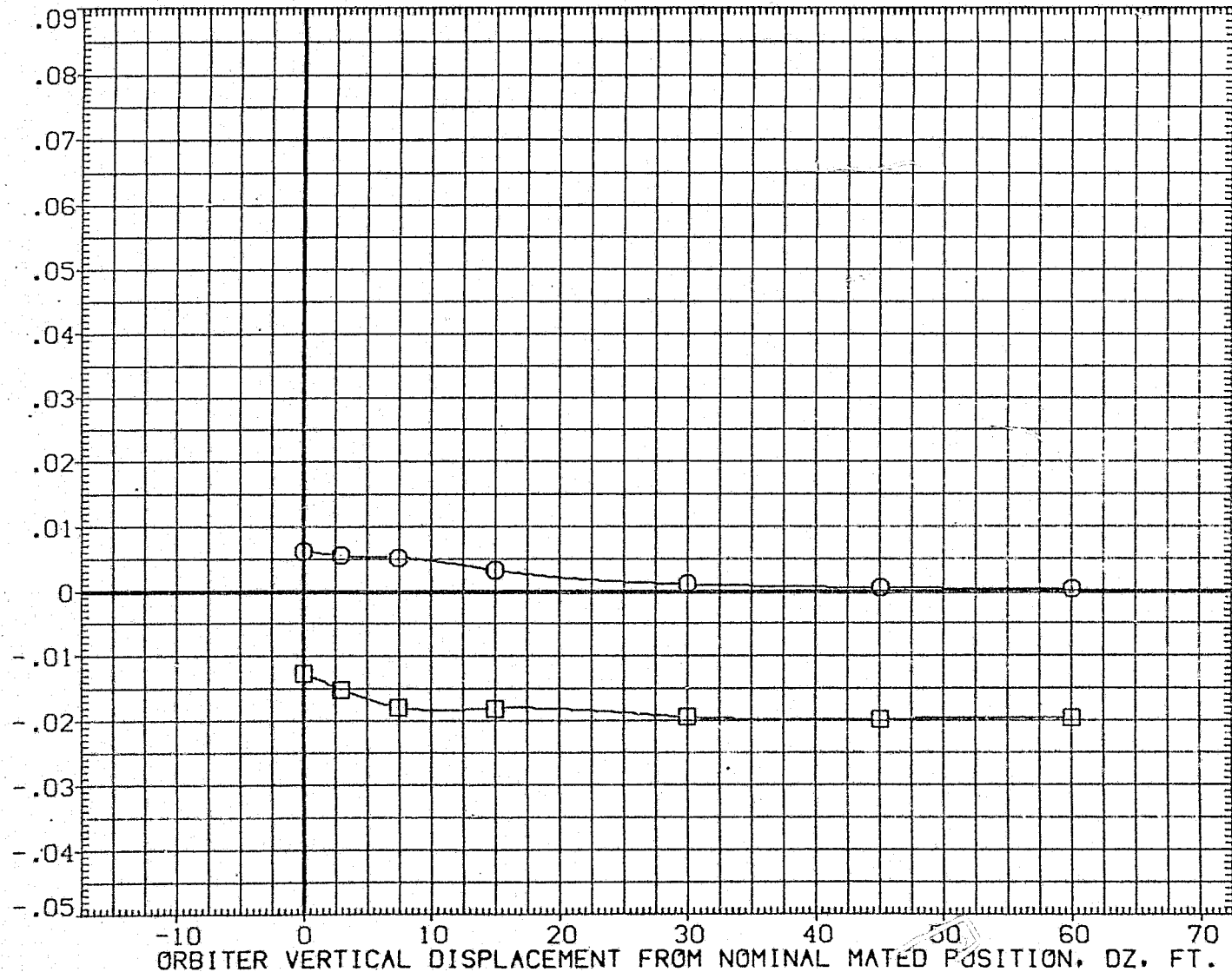


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN060)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

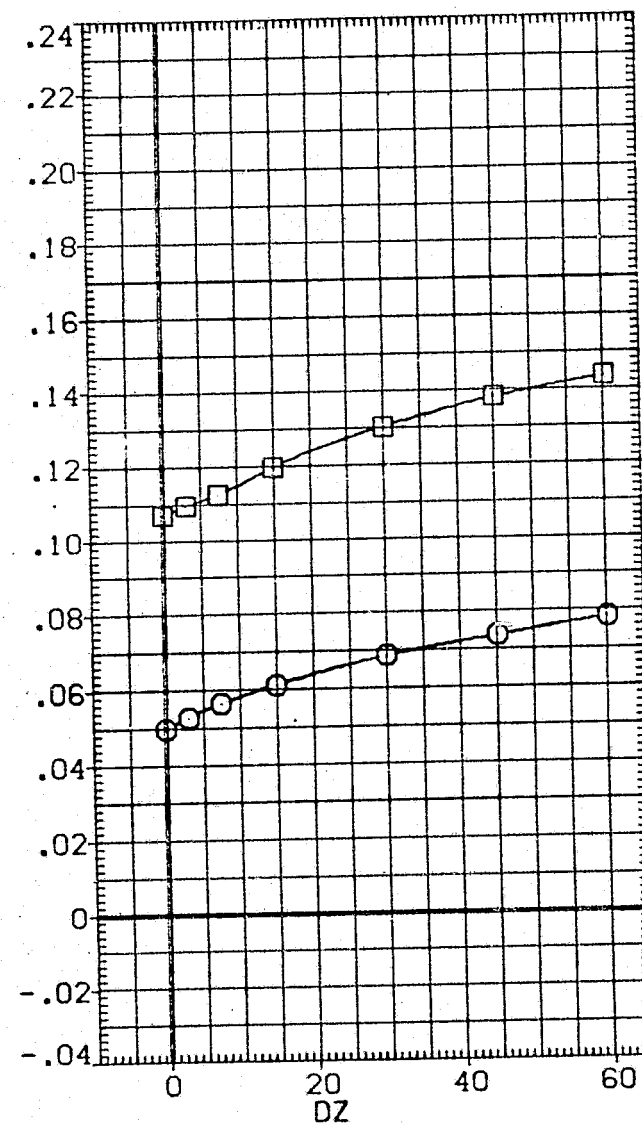
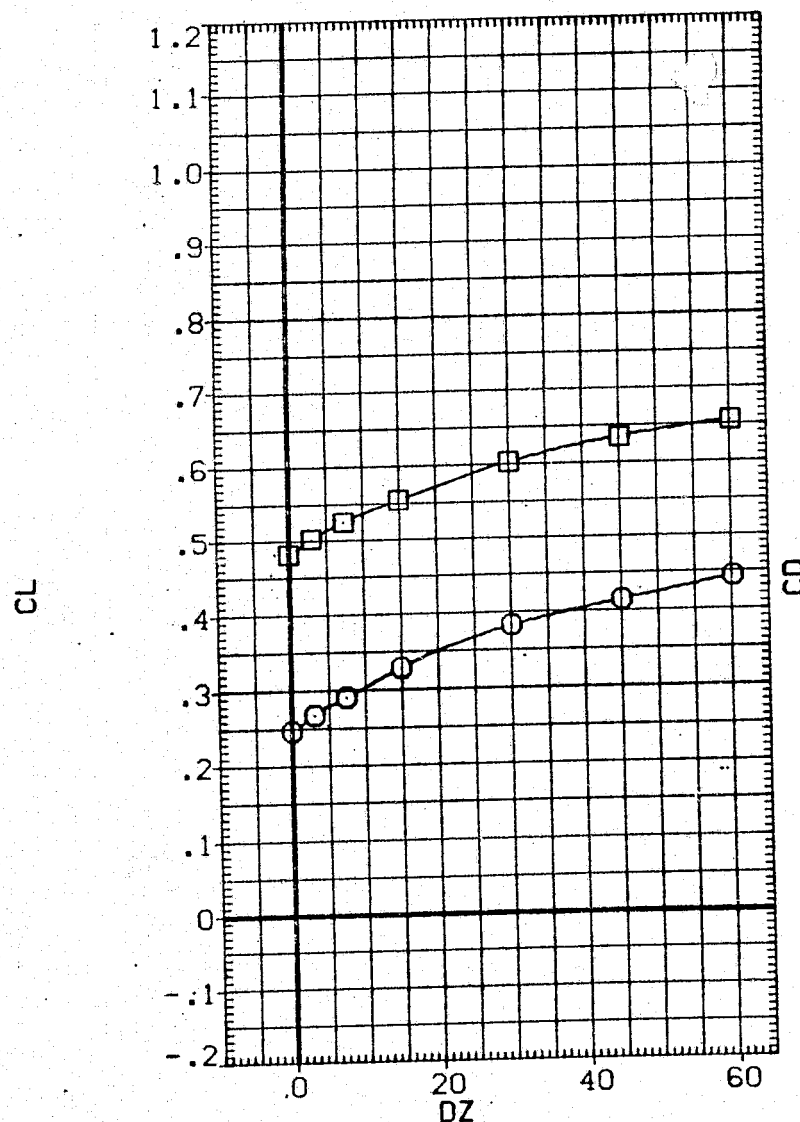


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN060)

SYMBOL

○
□

ALPHA0

10.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

.000

.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

.000

10.000

8.000

REFERENCE INFORMATION

SREF 2690.0000 SO.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

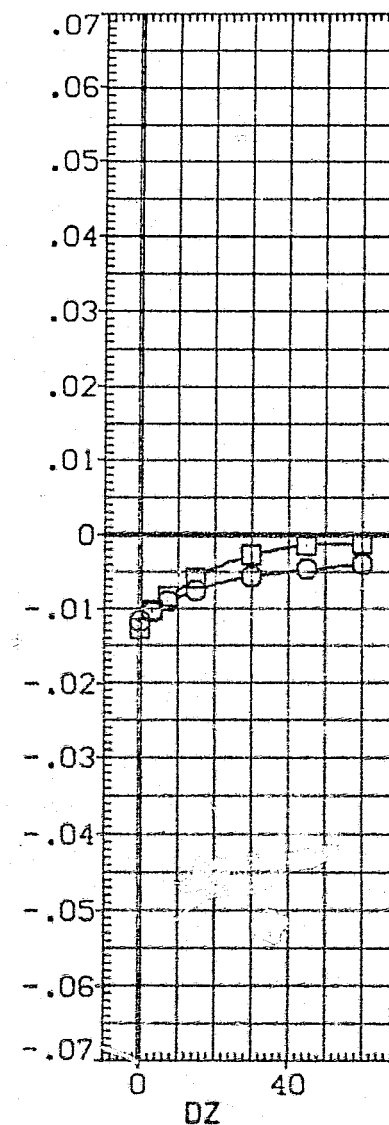
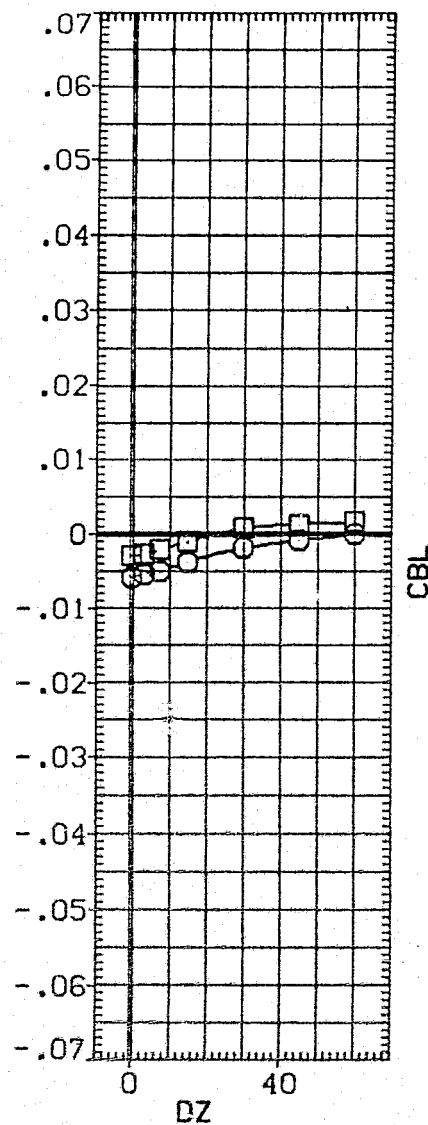
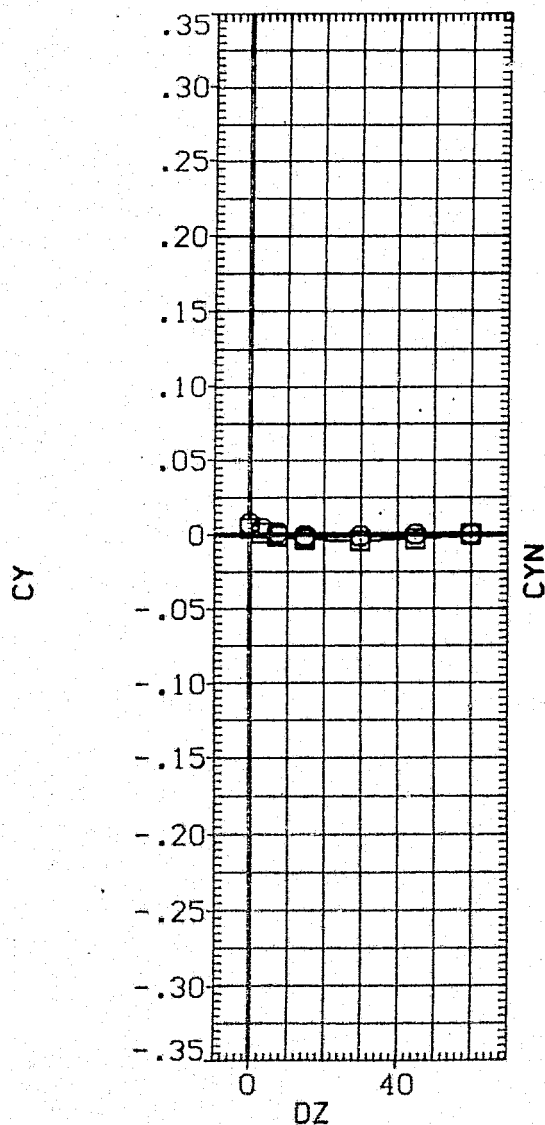


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.9100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

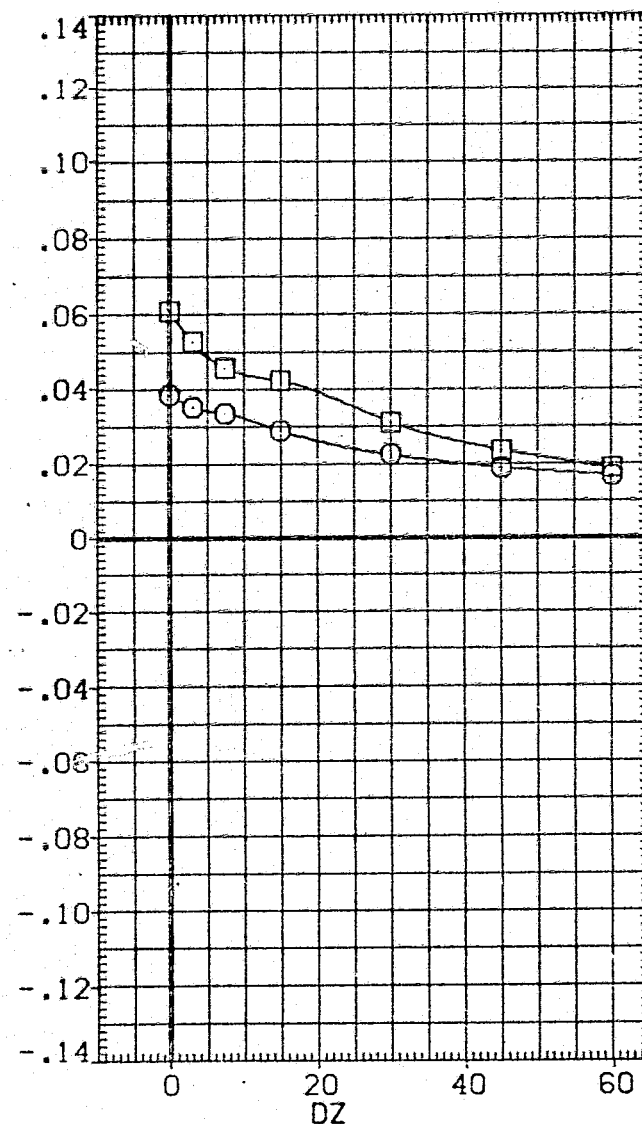
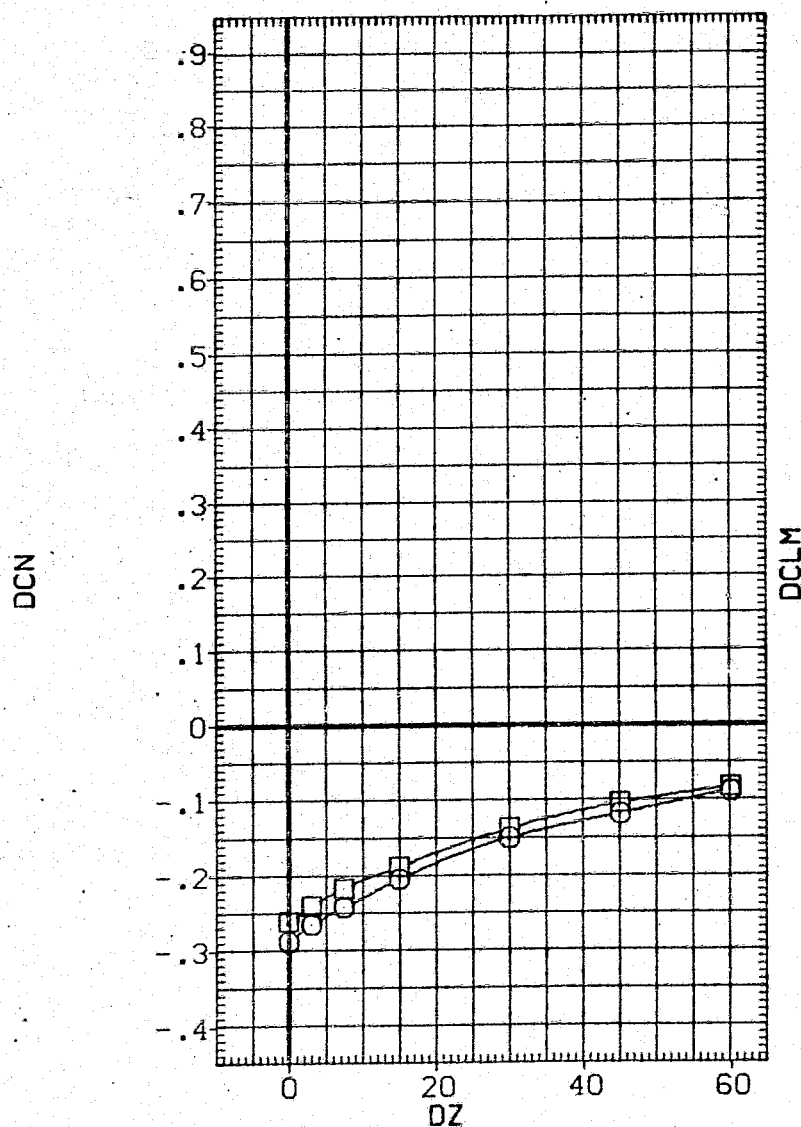


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (060 - 010)(VGN060)

SYMBOL

○
□

ALPHA0

10.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

10.000

BETAC

ELV-08

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

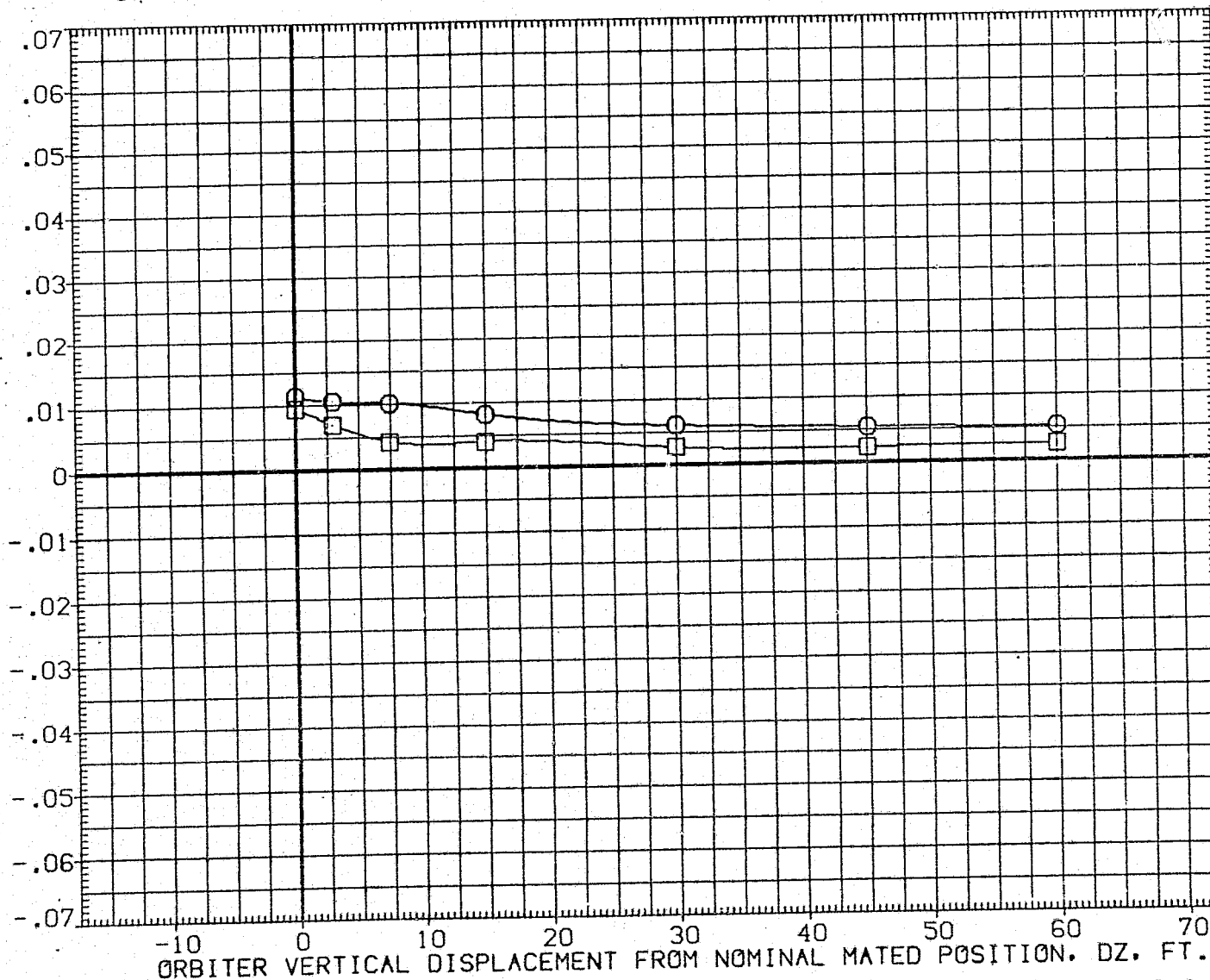


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0
10.000
14.000

ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000 BETAC .000
.000 ELV-08 3.000
5.000 MACH .600
.000 DX .000
10.000 BETA0 .000

REFERENCE INFORMATION

		SQ.FT.
SREF	2690.0000	
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL

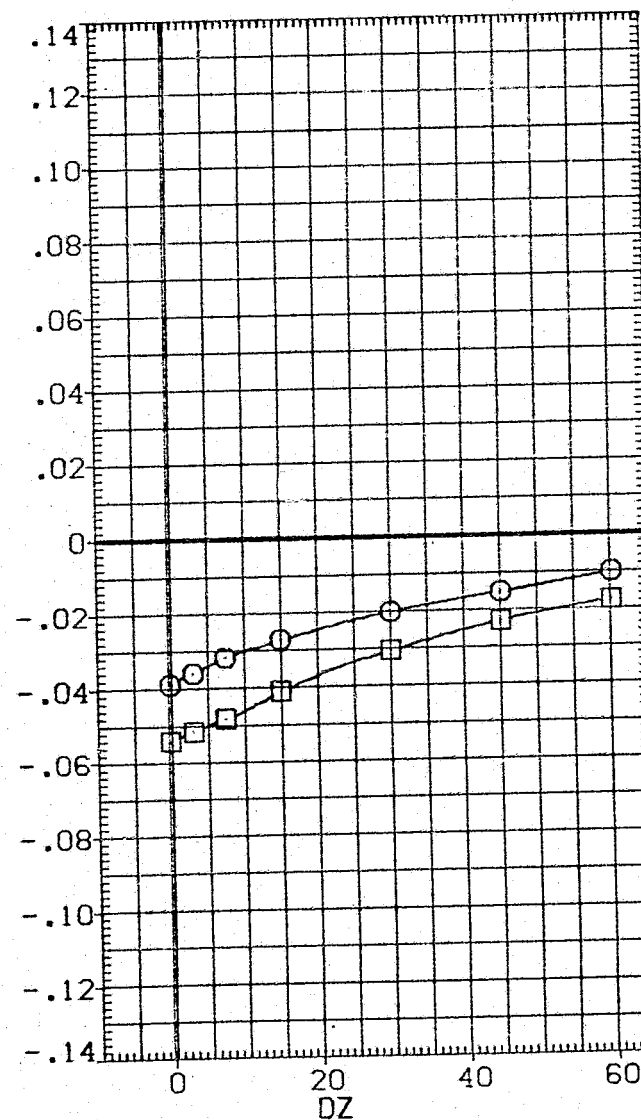
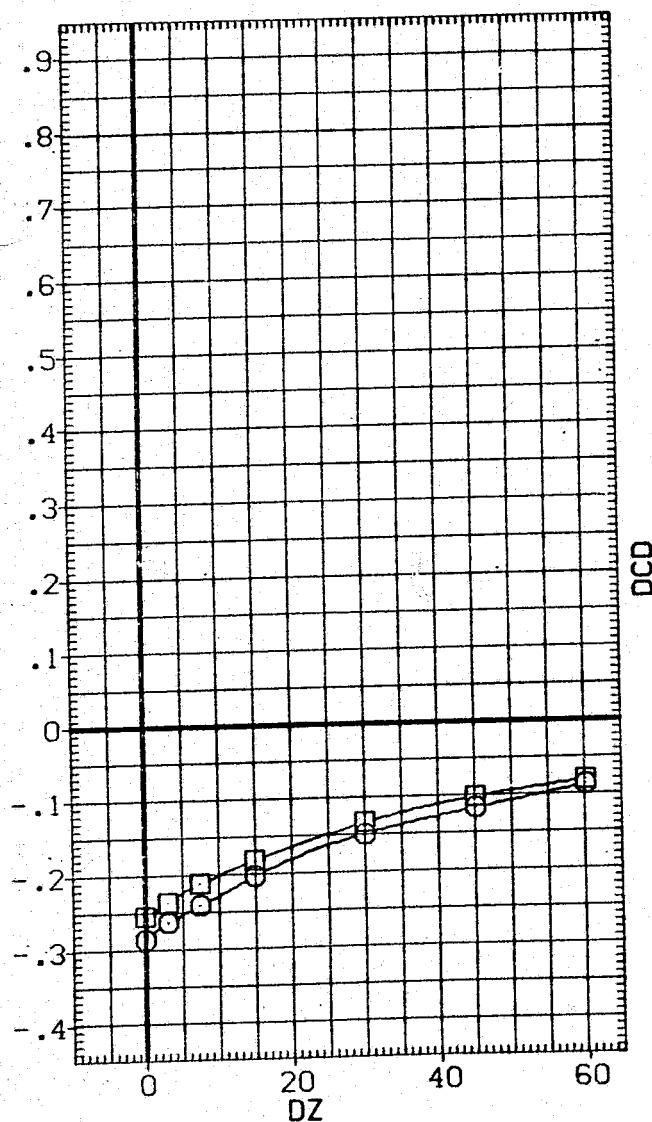


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN059)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

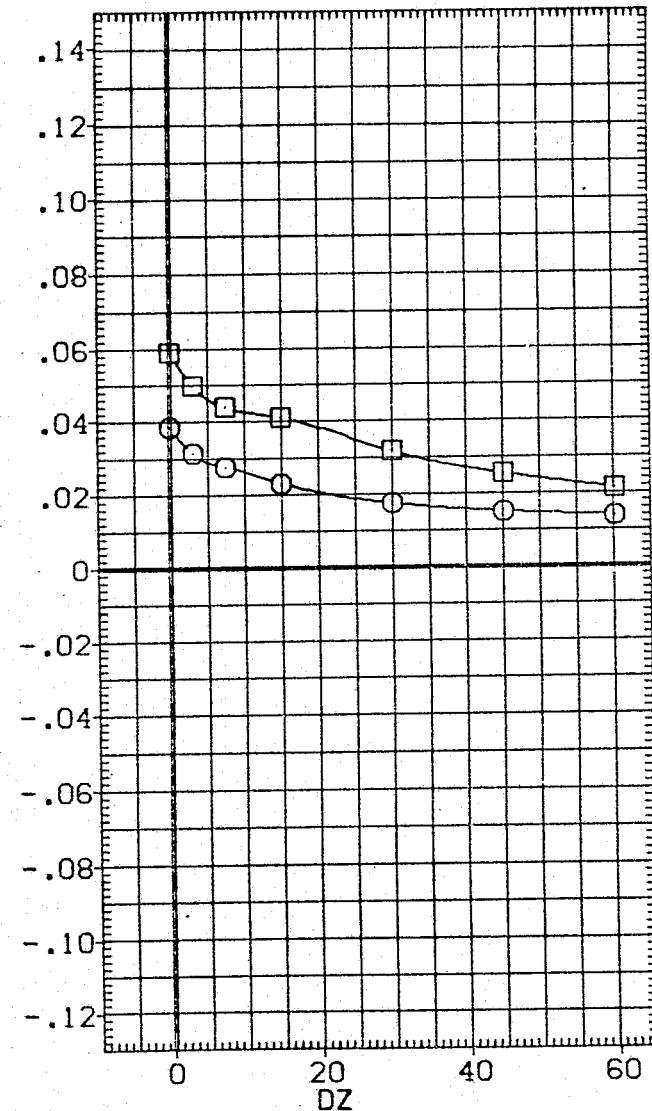
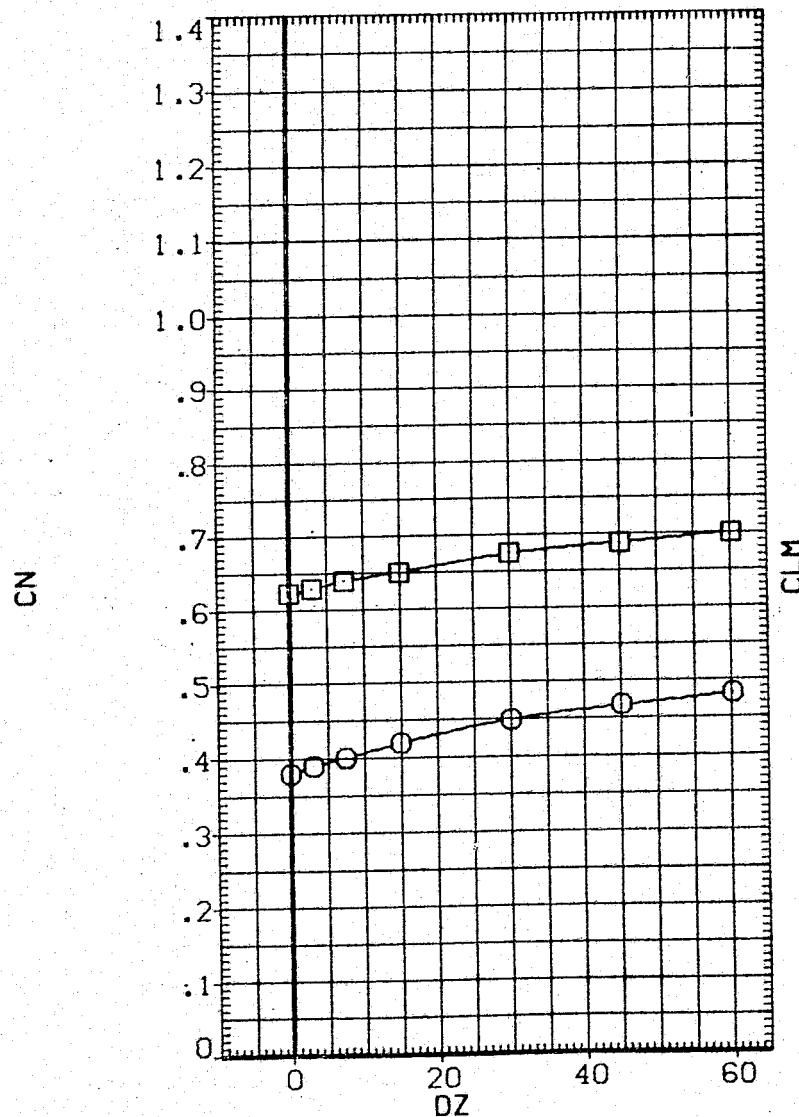


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000	.000		3.000	
□	14.000	5.000		.600	
		BETA0	.000	BETAC	.000
		PHI	.000	OY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

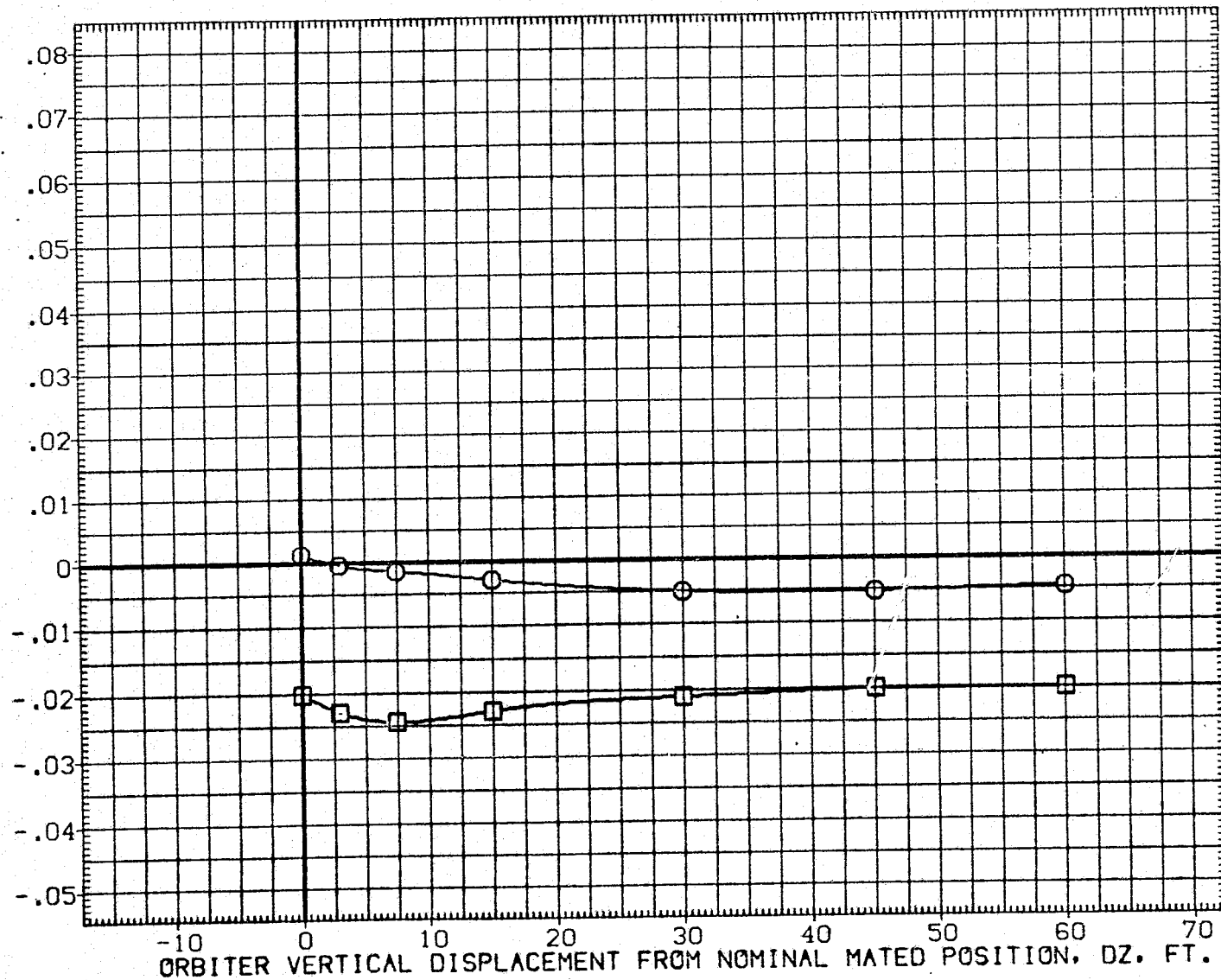


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN059)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI .000 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

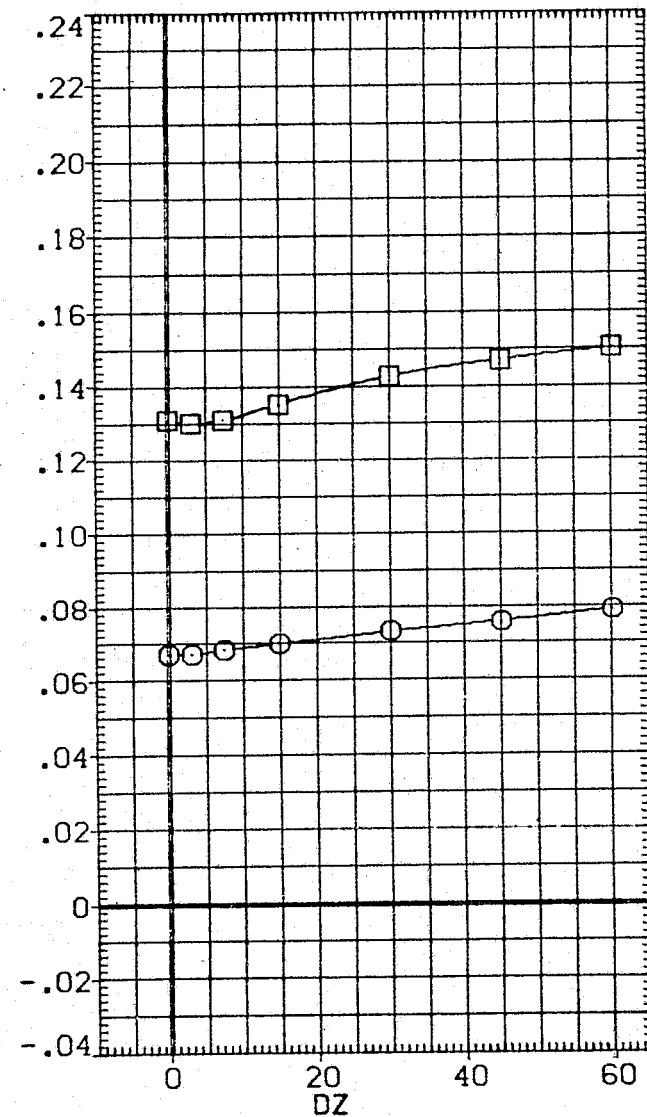
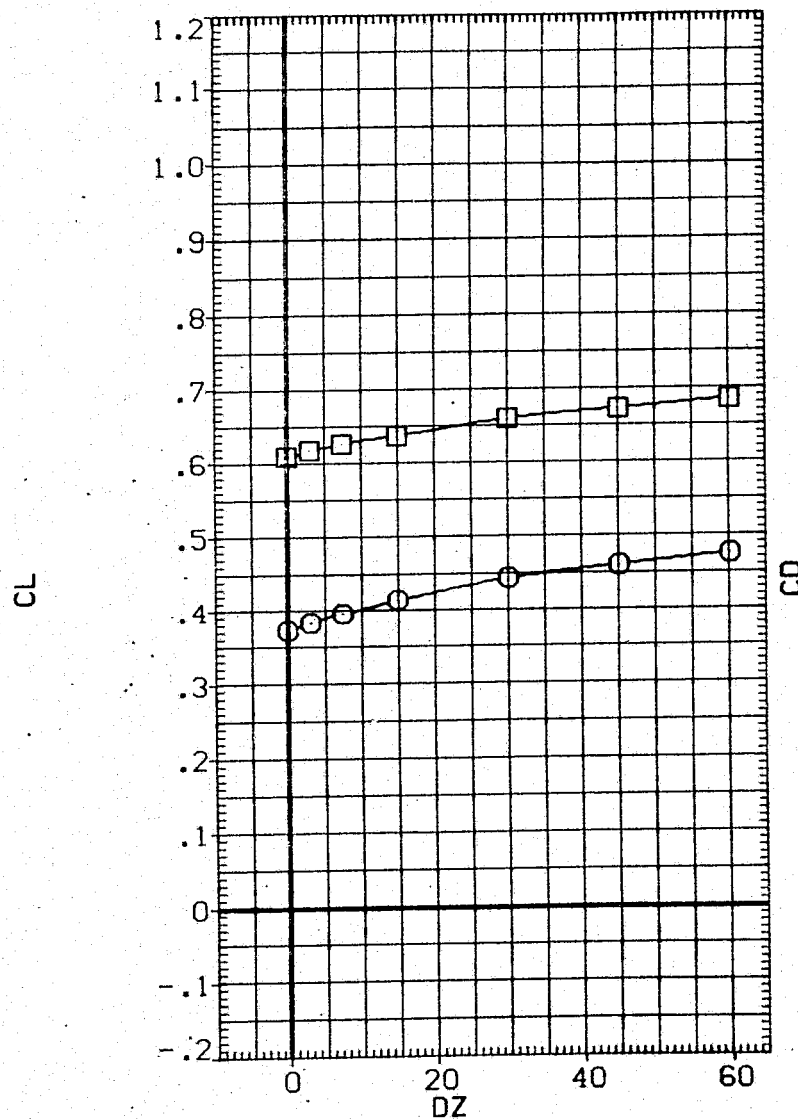


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

.000

10.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

.000

10.000

4.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

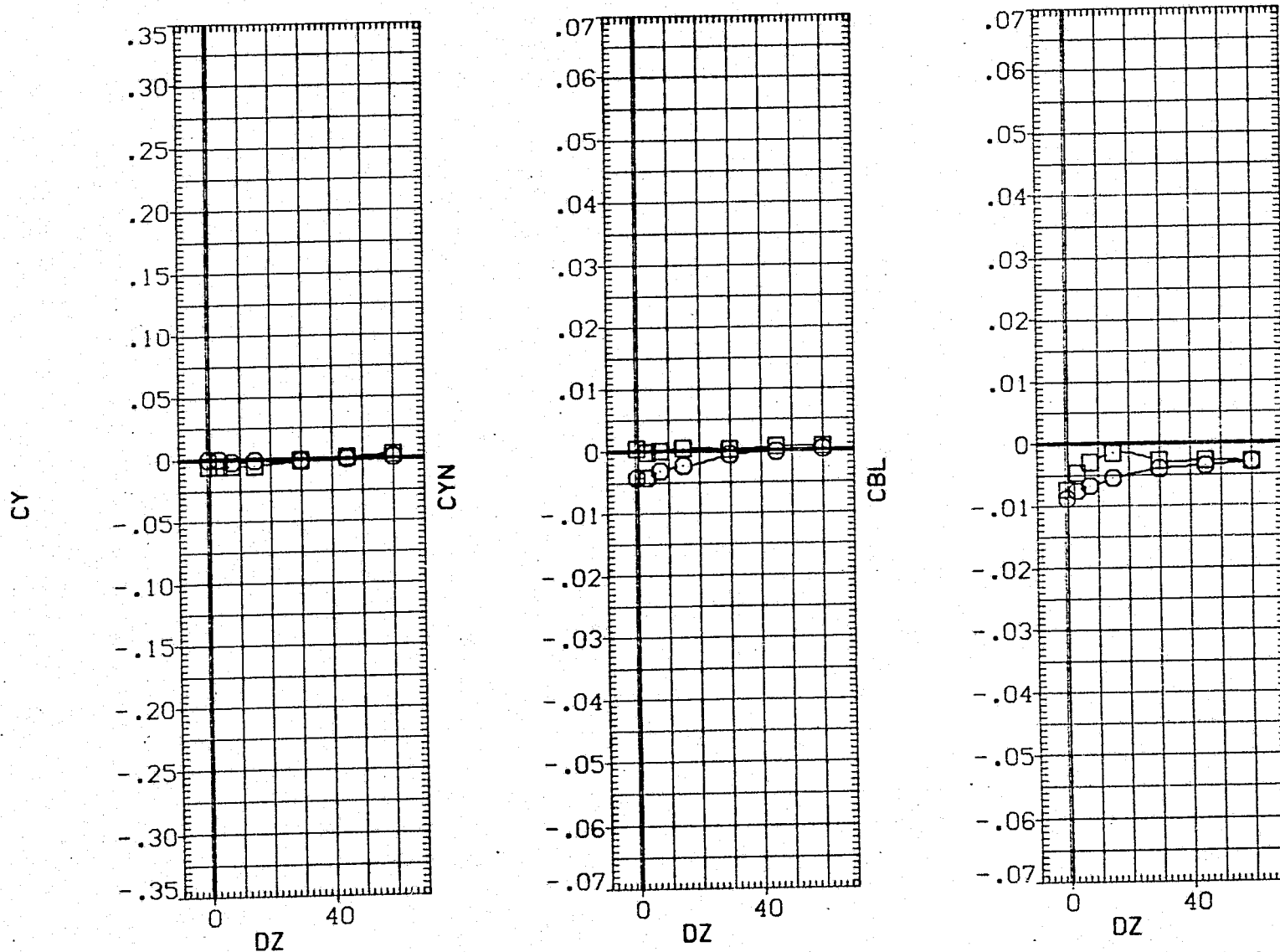


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (059 - 010) (VGN059)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

10.000

DY

10.000

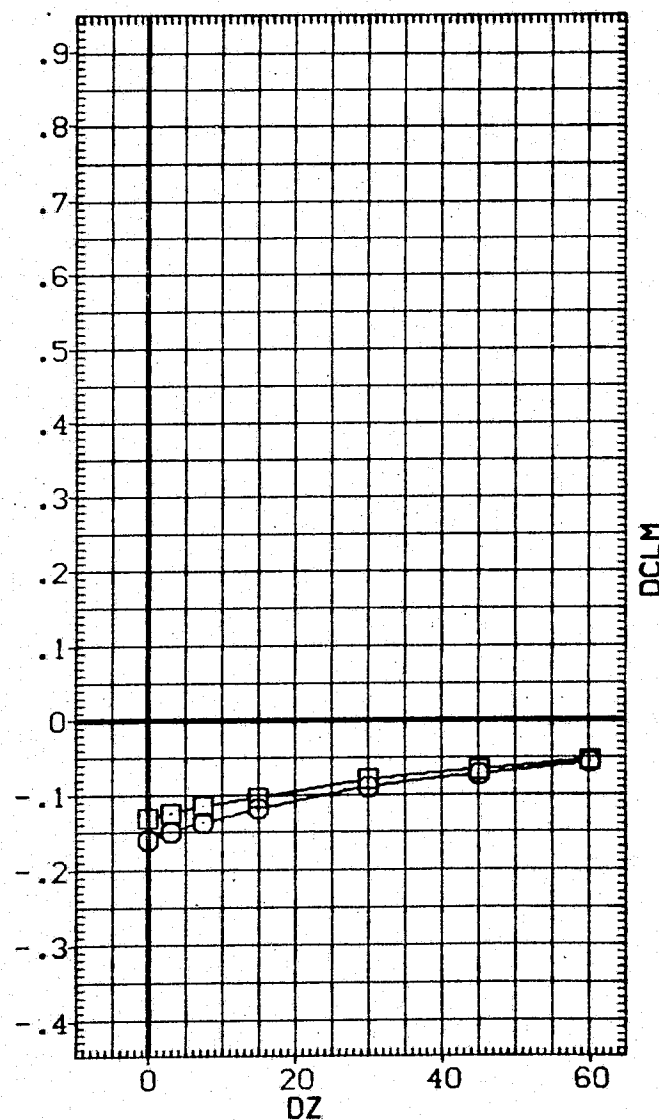
BETA0

.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

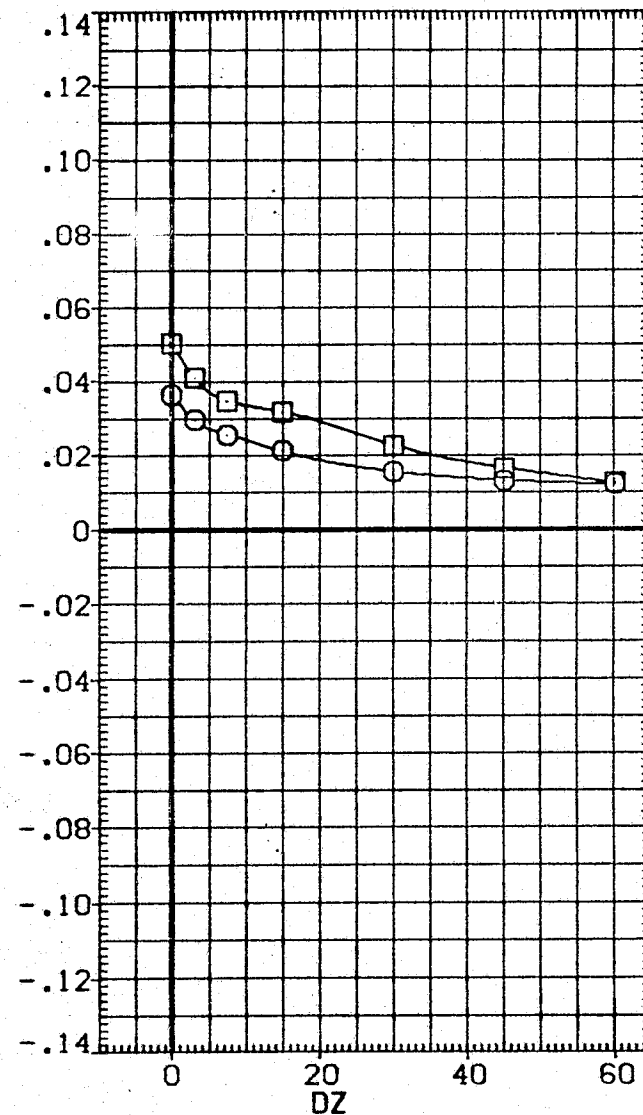


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL
○
□

ALPHA0
10.000
14.000

ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000 BETAC .000
.000 ELV-OB 3.000
5.000 MACH .600
.000 DX 10.000
10.000 BETA0 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

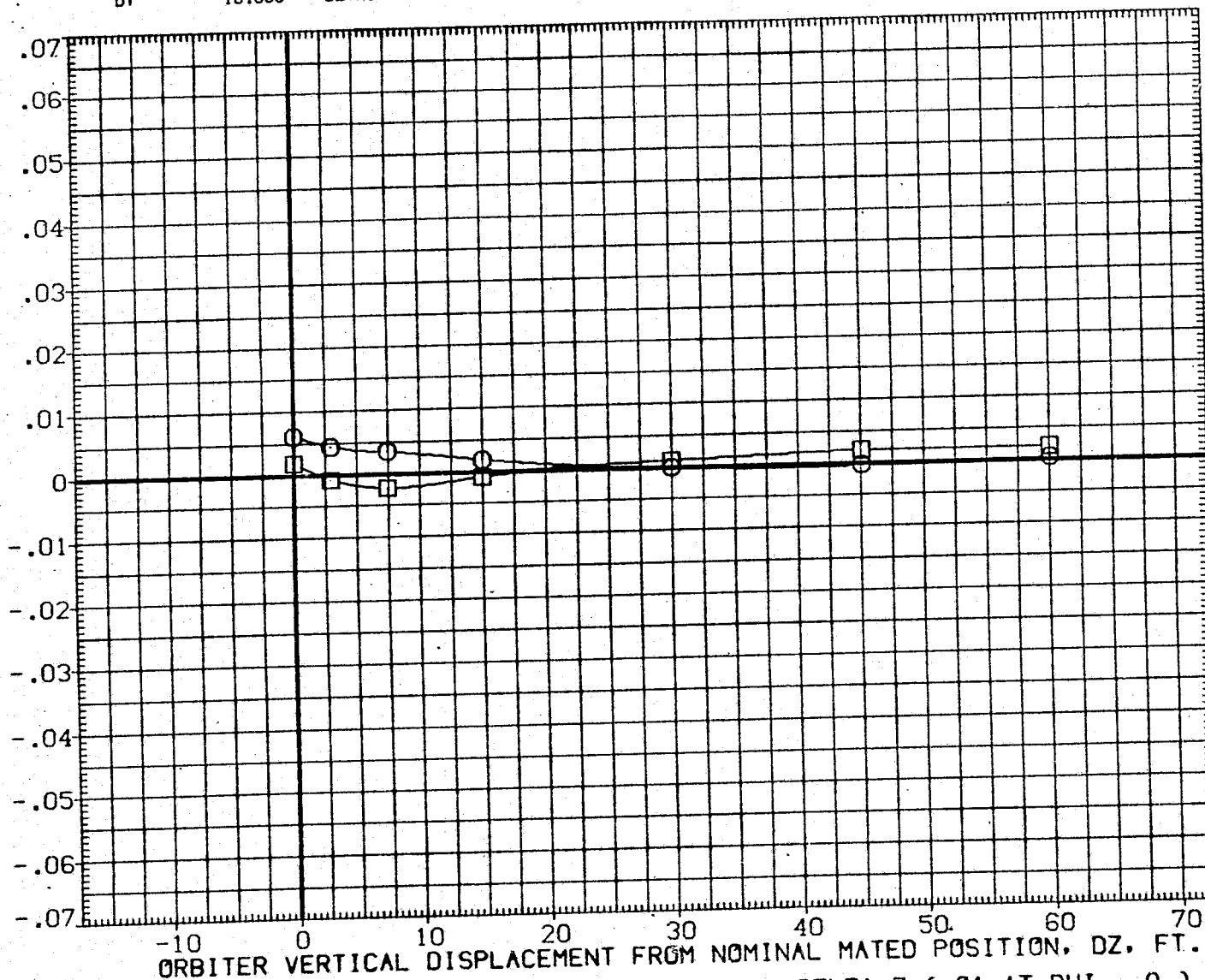


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (059 - 010) (VGN059)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

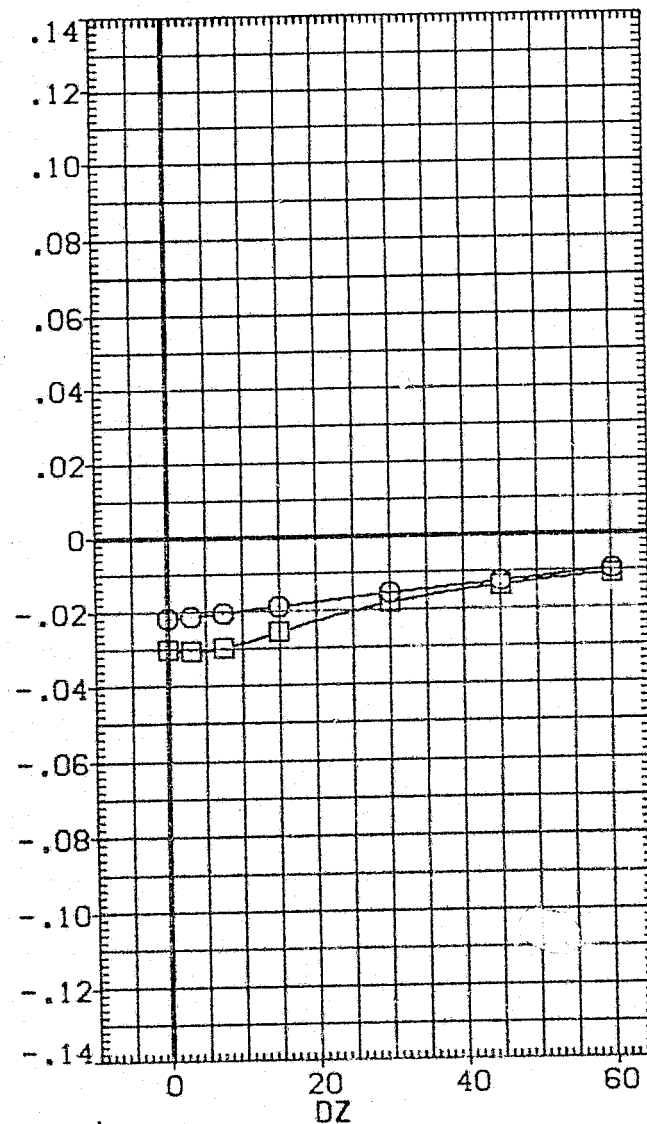
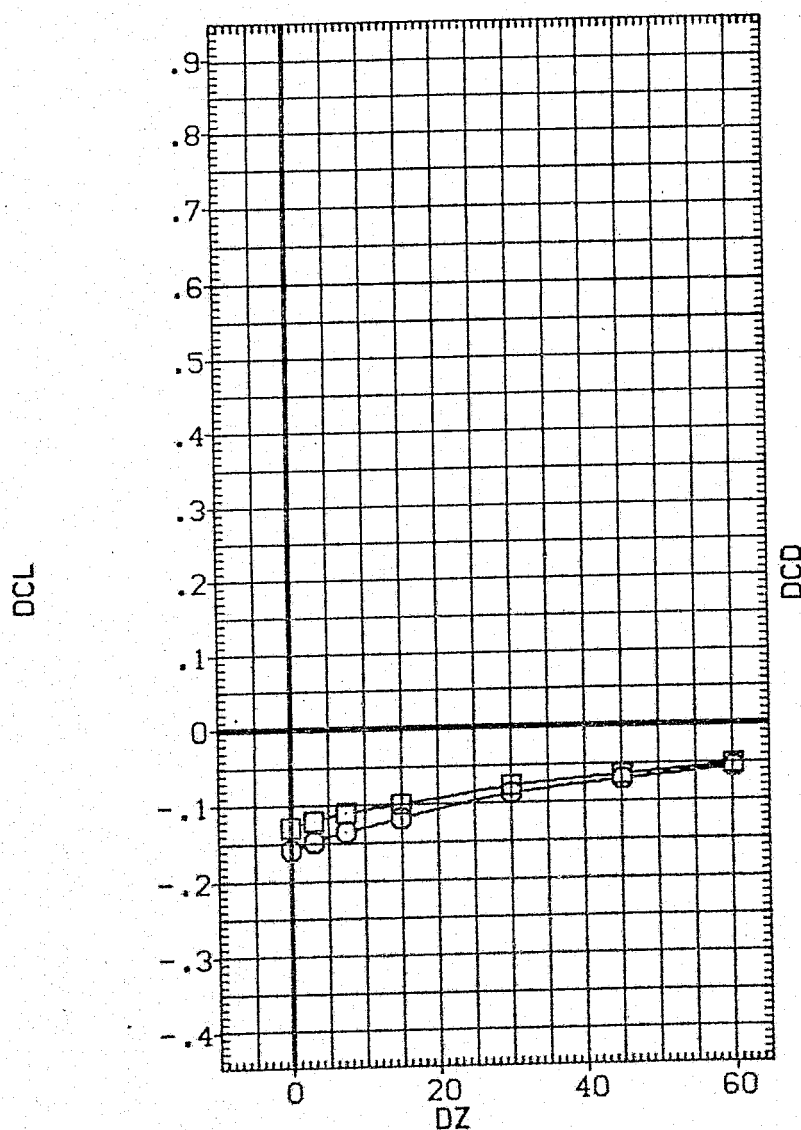


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN061)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

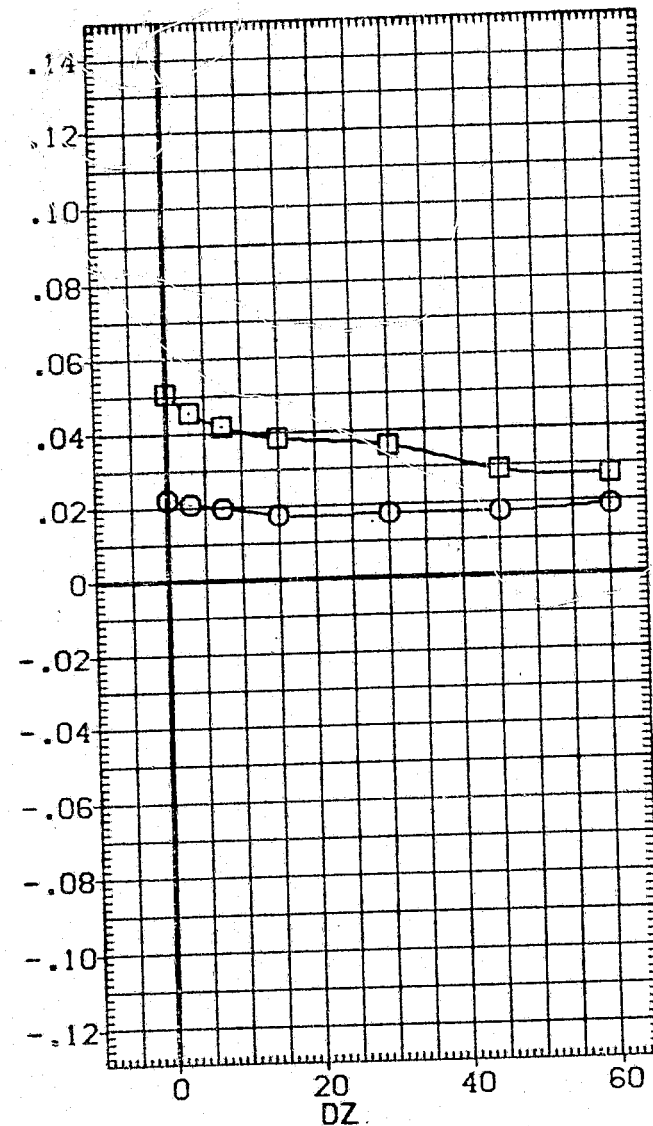
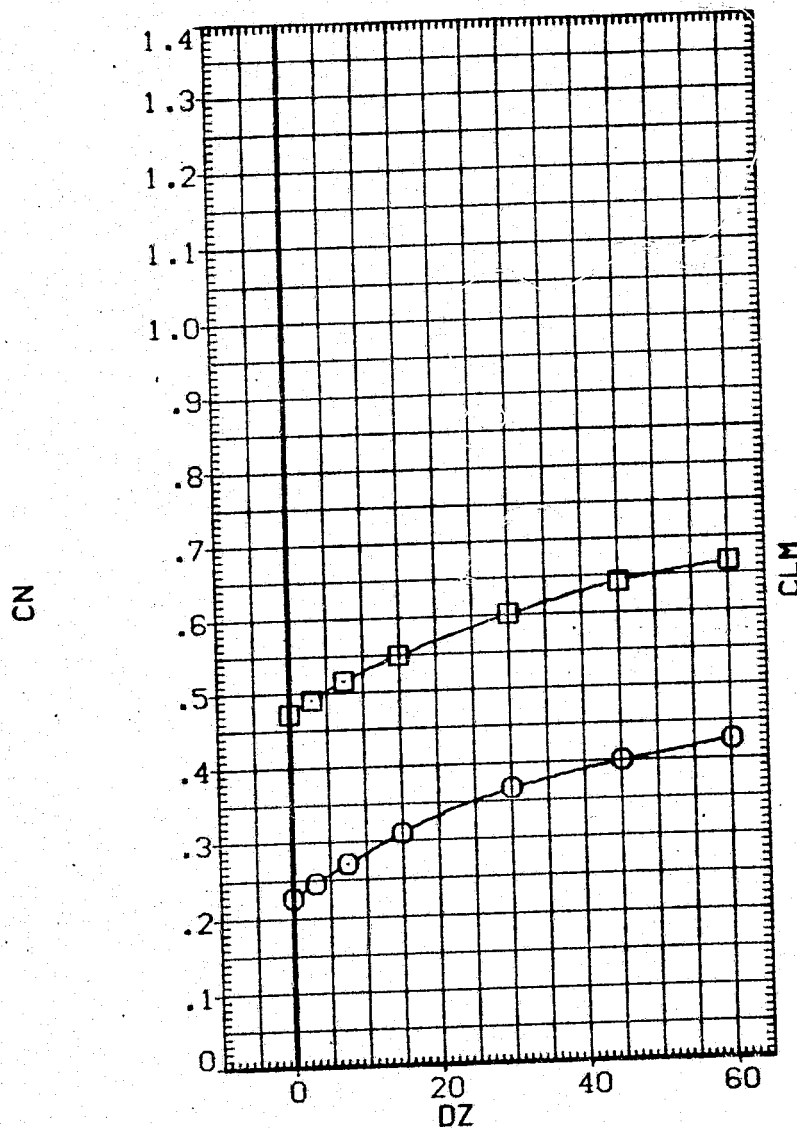


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN061)

SYMBOL		PARAMETRIC VALUES				
○	ALPHA0	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.800	
	BETA0	.000	BETAC	.000		
	PHI	.000	DY	10.000		
	DX	10.000	ALPHAC	8.000		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA.

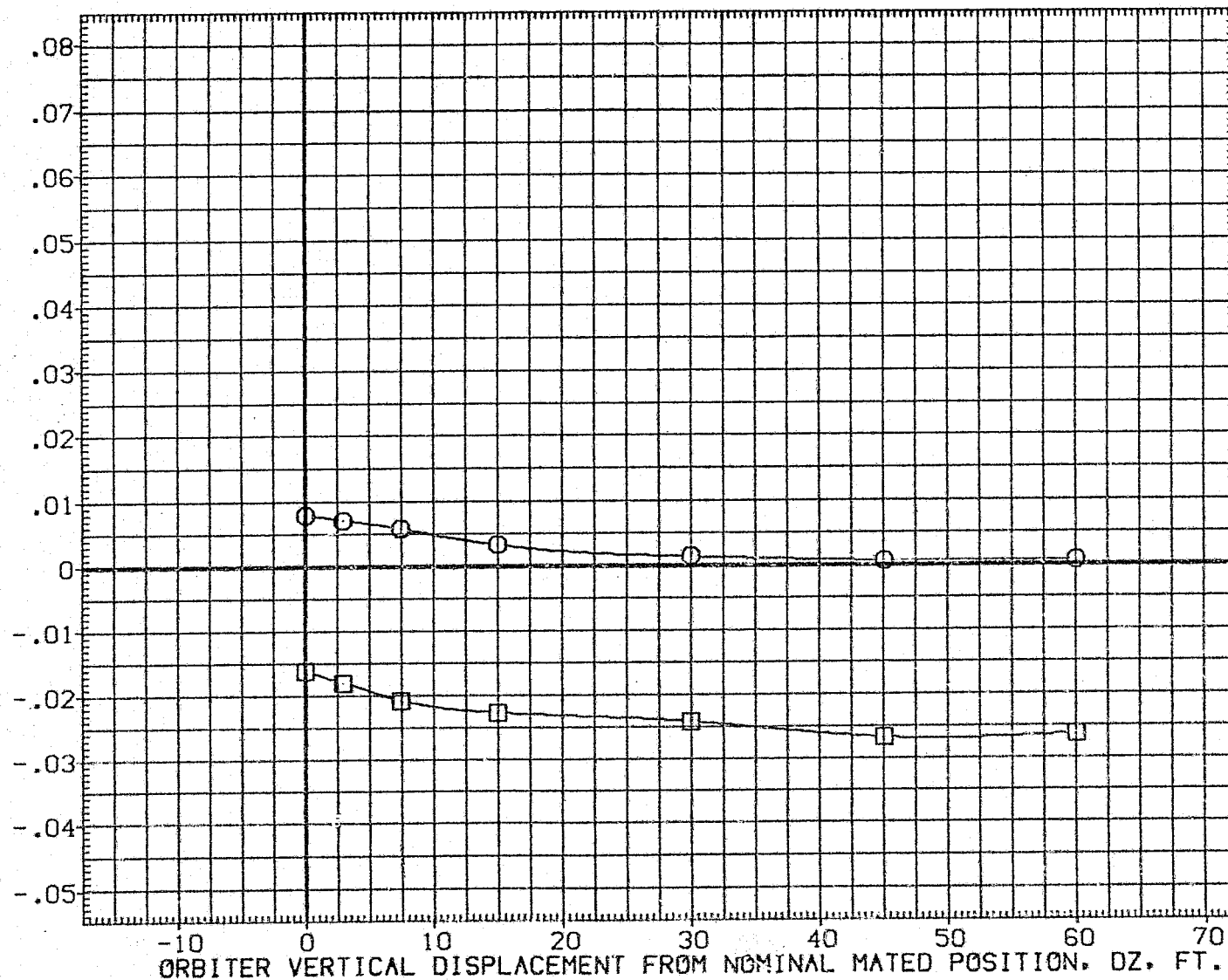


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	.000	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

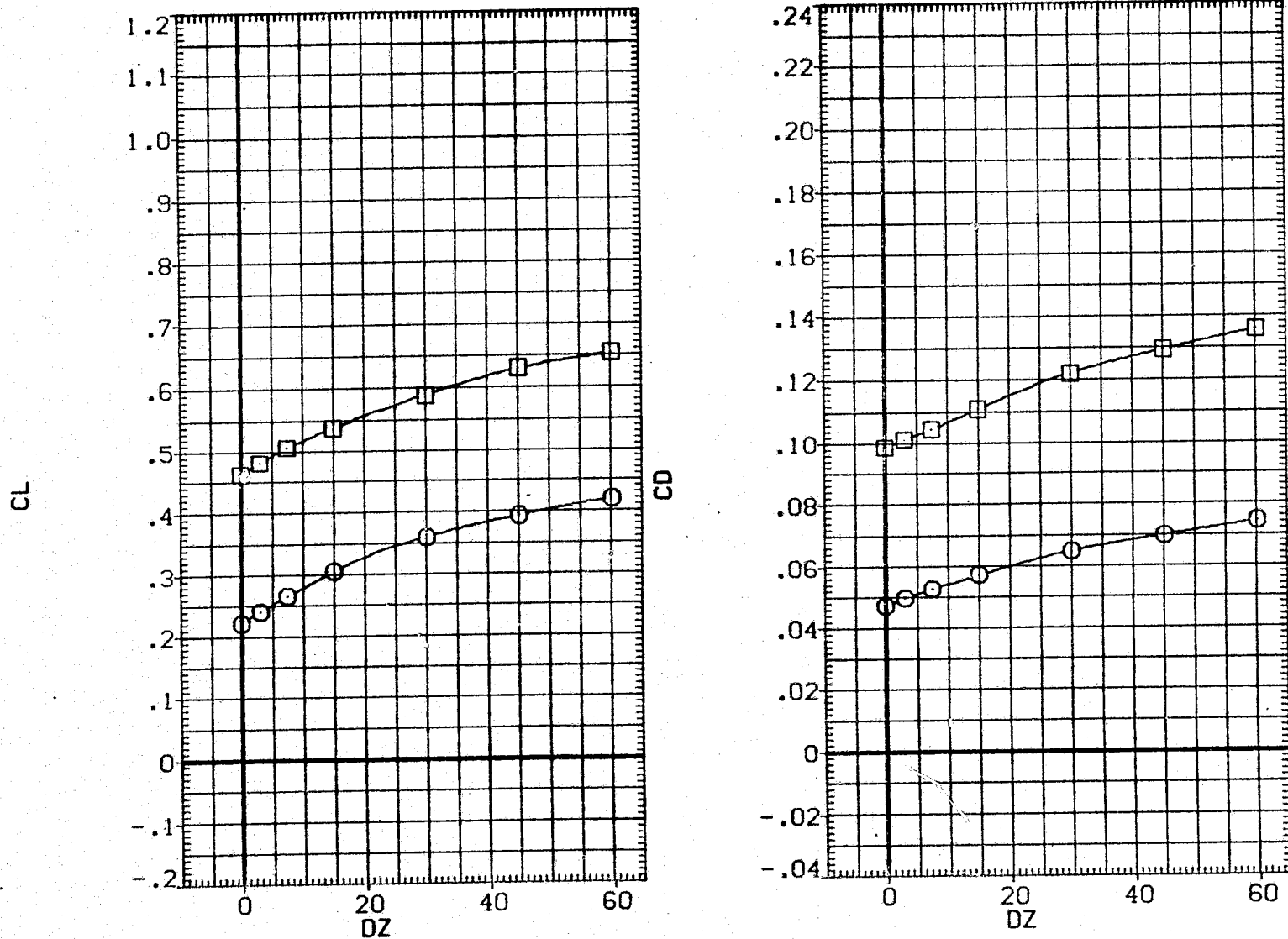


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN061)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
	BETA0 .000	BETAC .000
	PHI .000	DY 10.000
	DX 10.000	ALPHAC 8.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	424.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

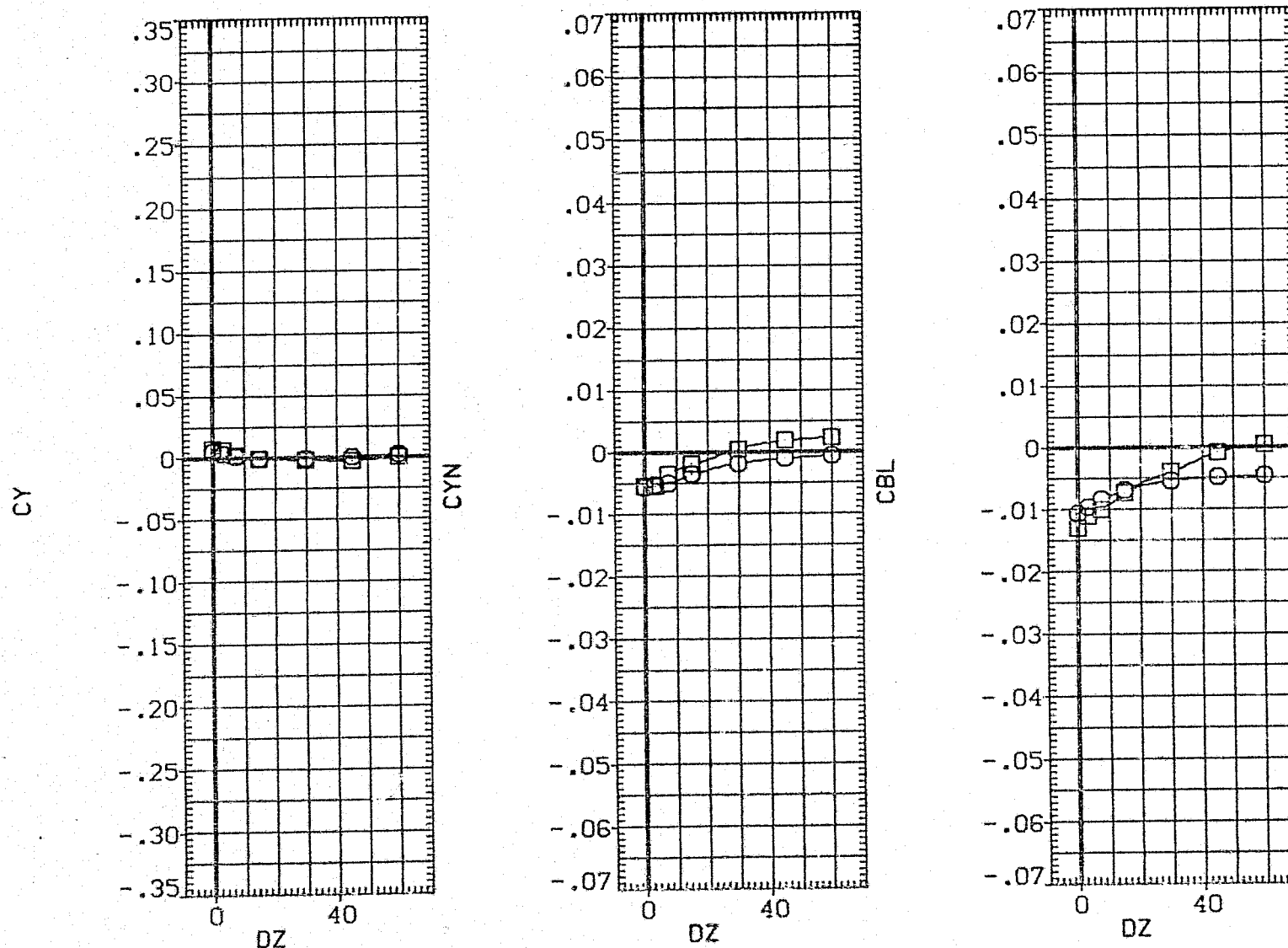


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL


 ALPHA0
10.000
14.000

 ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000	BETAC	.000
.000	ELV-OB	3.000
5.000	MACH	.600
.000	DX	10.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN

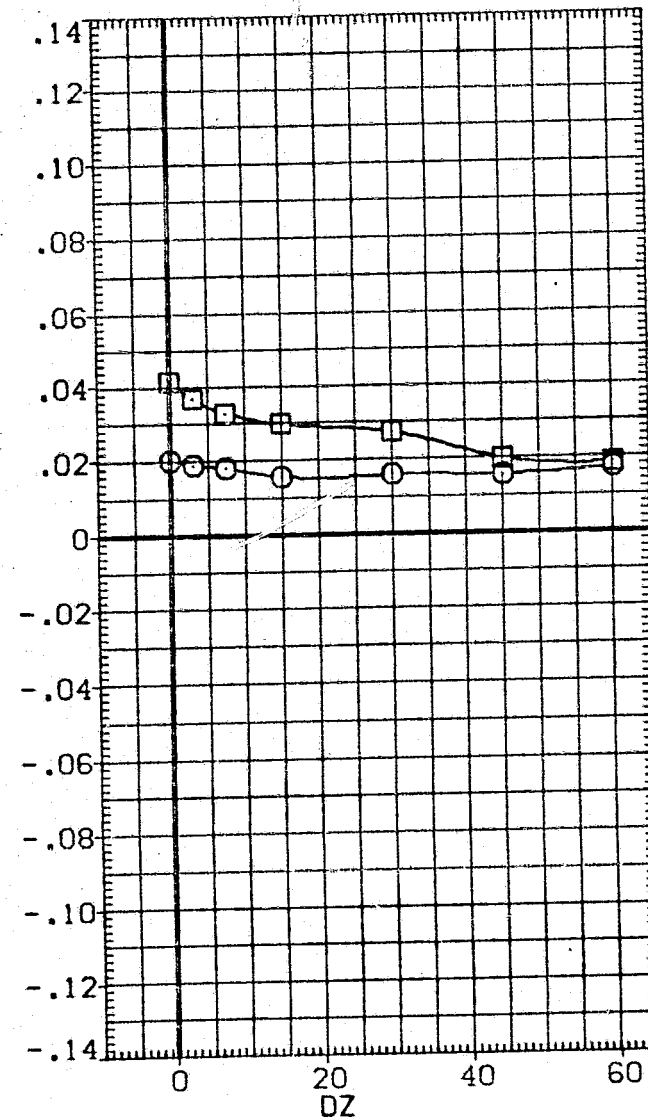
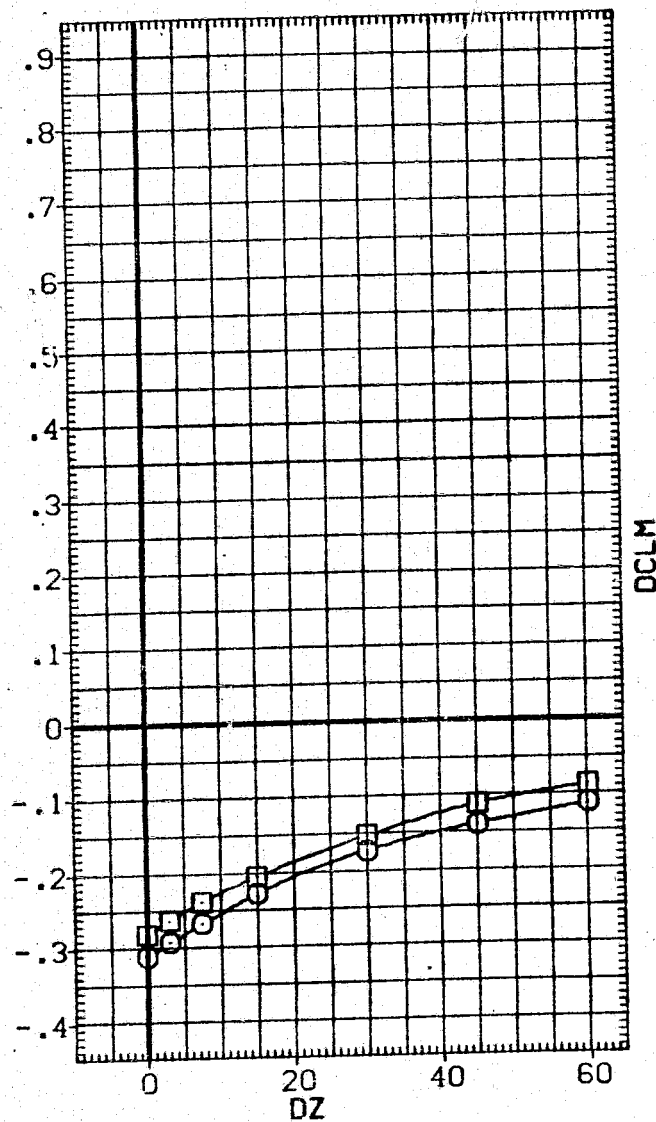


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (061 - 010)(VGN061)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

.000

ELV-OB

3.000

MACH

.600

DX

10.000

BETA0

.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

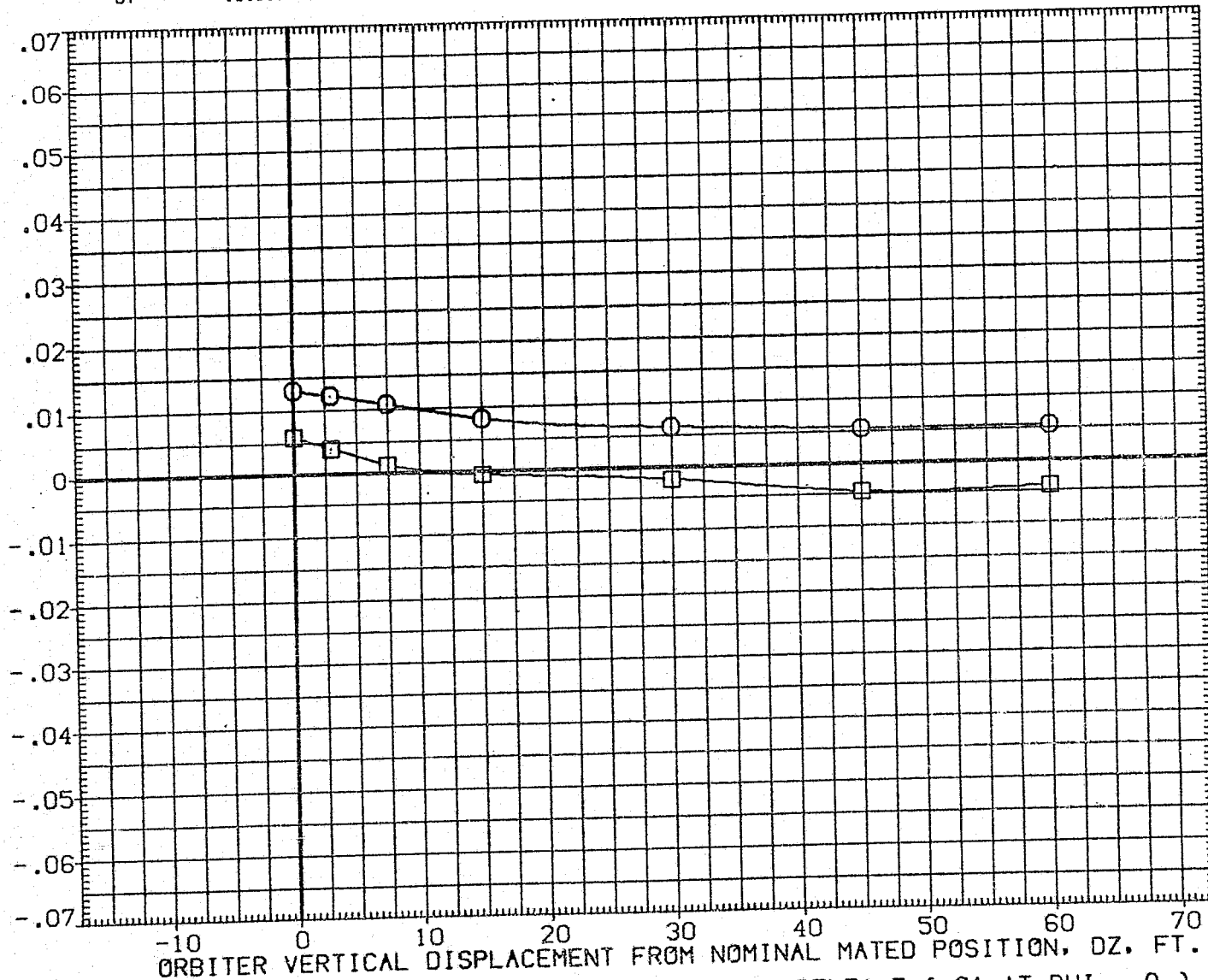


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□ALPHA0
10.000
14.000ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000	BETAC	.000
.000	ELV-0B	3.000
5.000	MACH	.600
.000	DX	10.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL

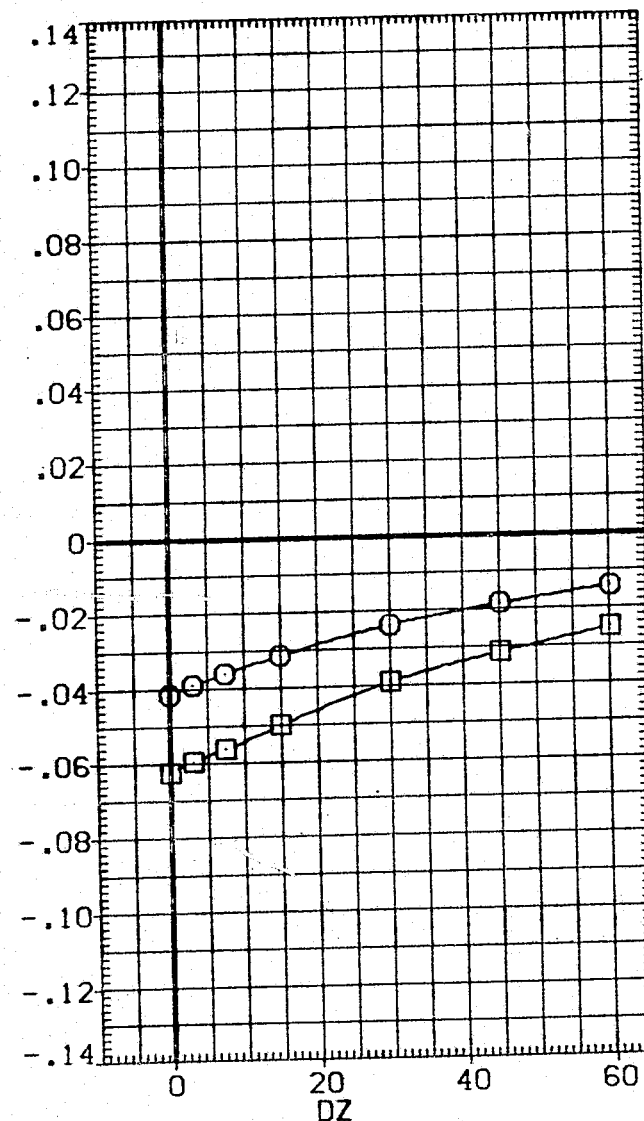
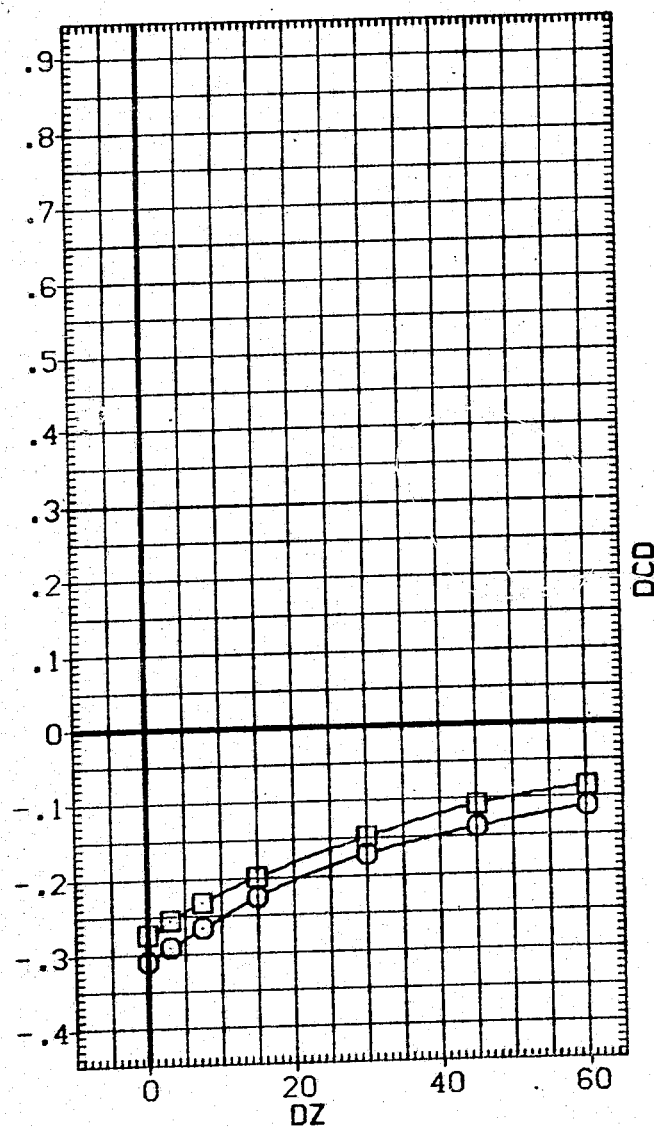


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN072)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	ELV-IB	.000	ELV-OB	3.000	
○	14.000	ELEVON	5.000	MACH	.600	
□		BETA0	.000	BETAC	5.000	
		PHI	.000	DY	10.000	
		DX	.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

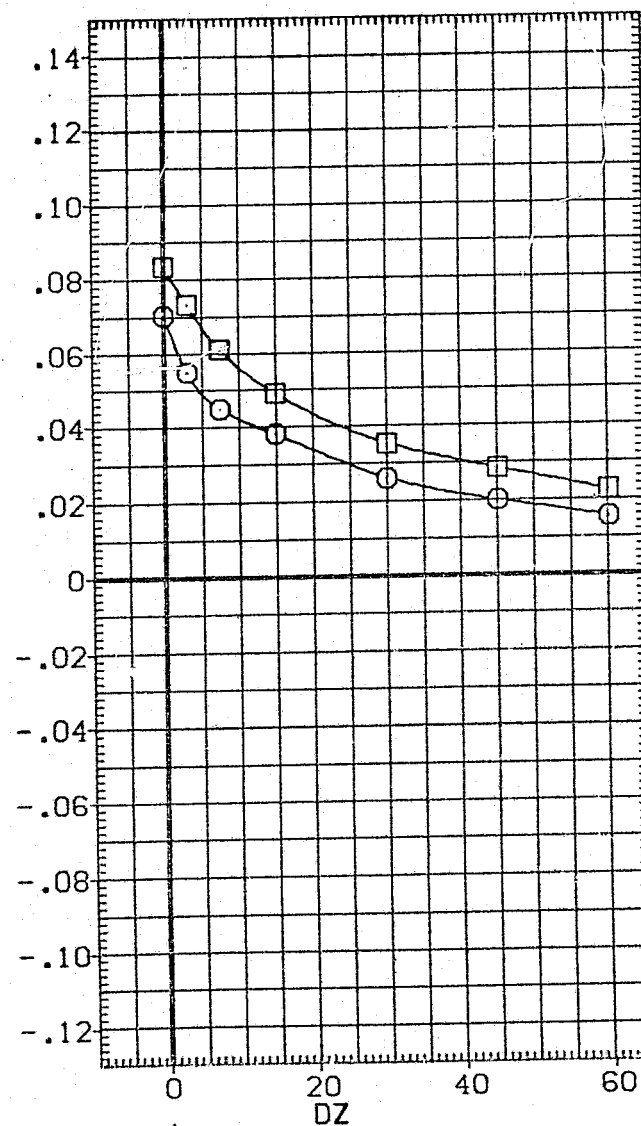
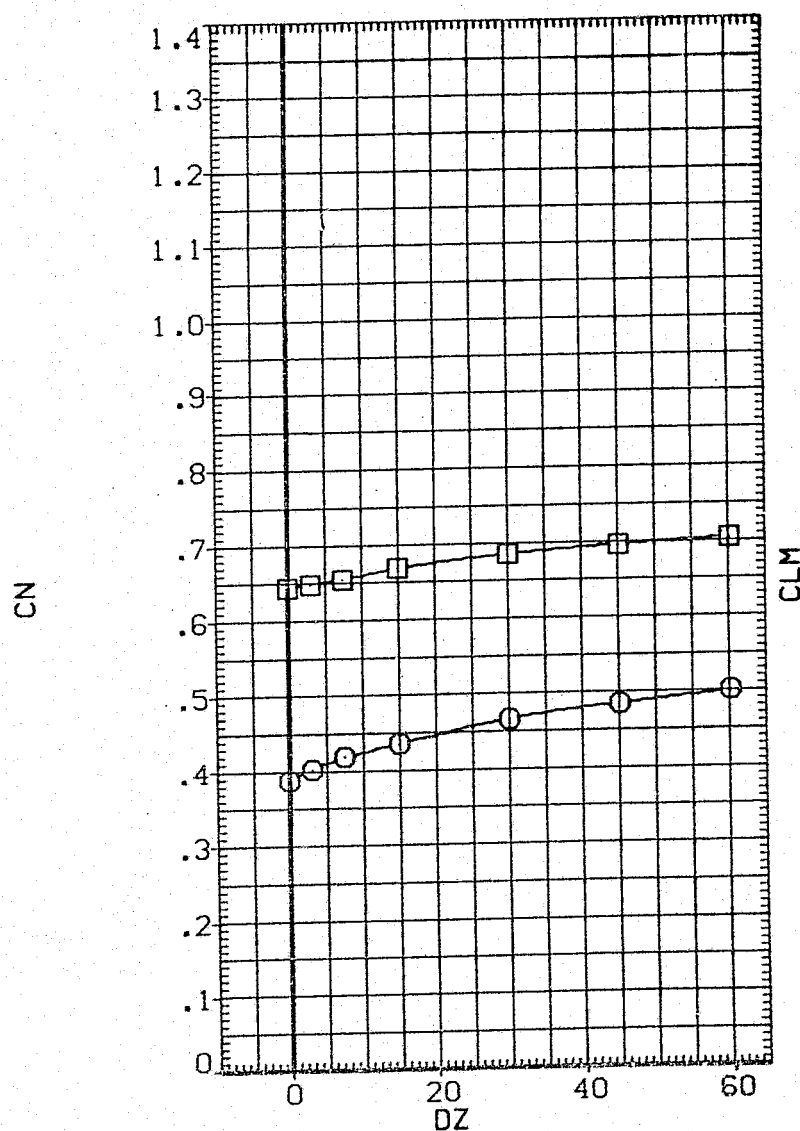


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN072)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
	BETA0 .000	BETAC 5.000
	PHI .000	DY 10.000
	DX .000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

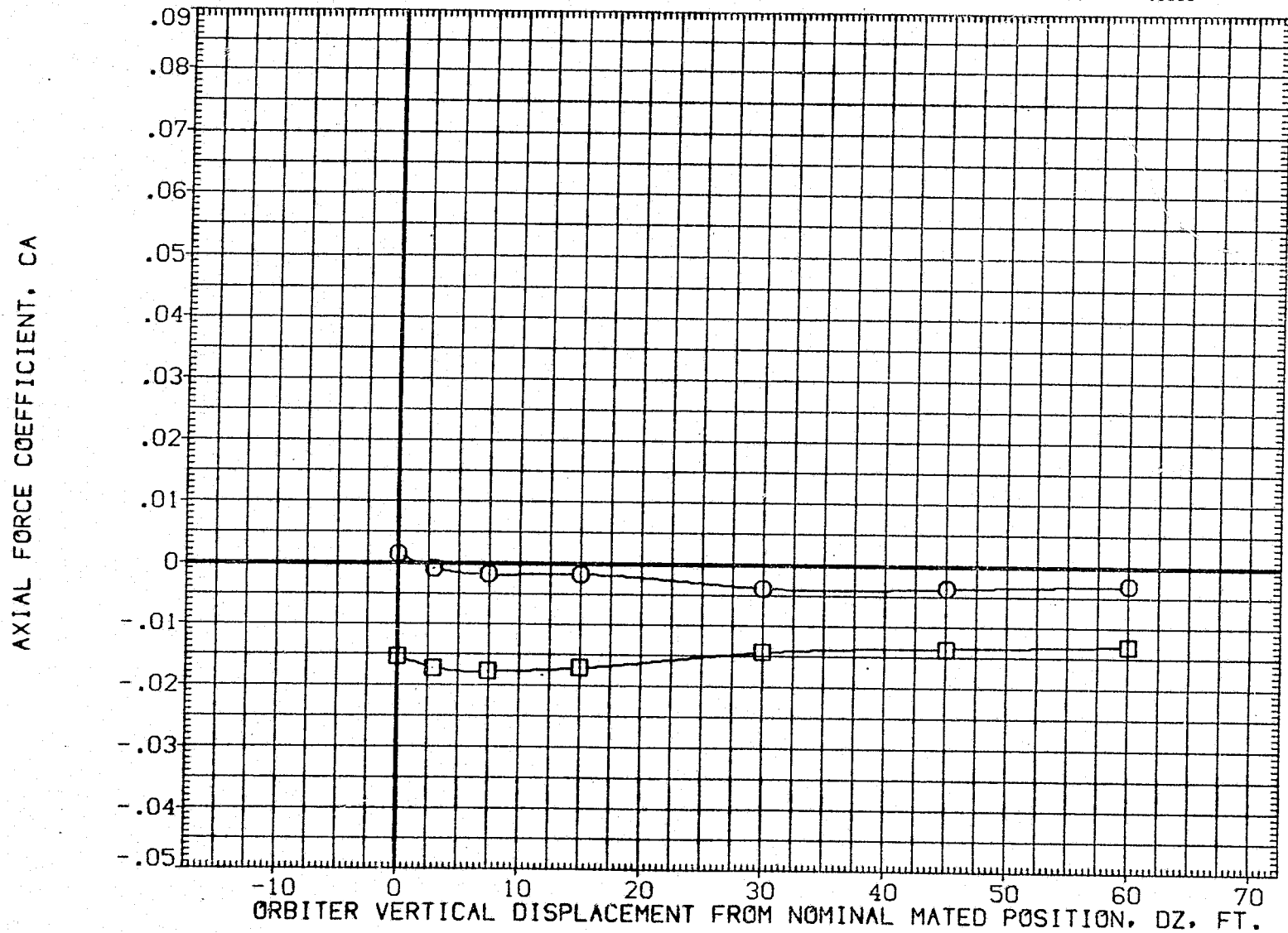


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN072)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	ELV-1B	.000	ELV-0B	3.000	
○	14.000	ELEVON	5.000	MACH	.600	
□		BETA0	.000	BETAC	5.000	
		PHI	.000	DY	10.000	
		DX	.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

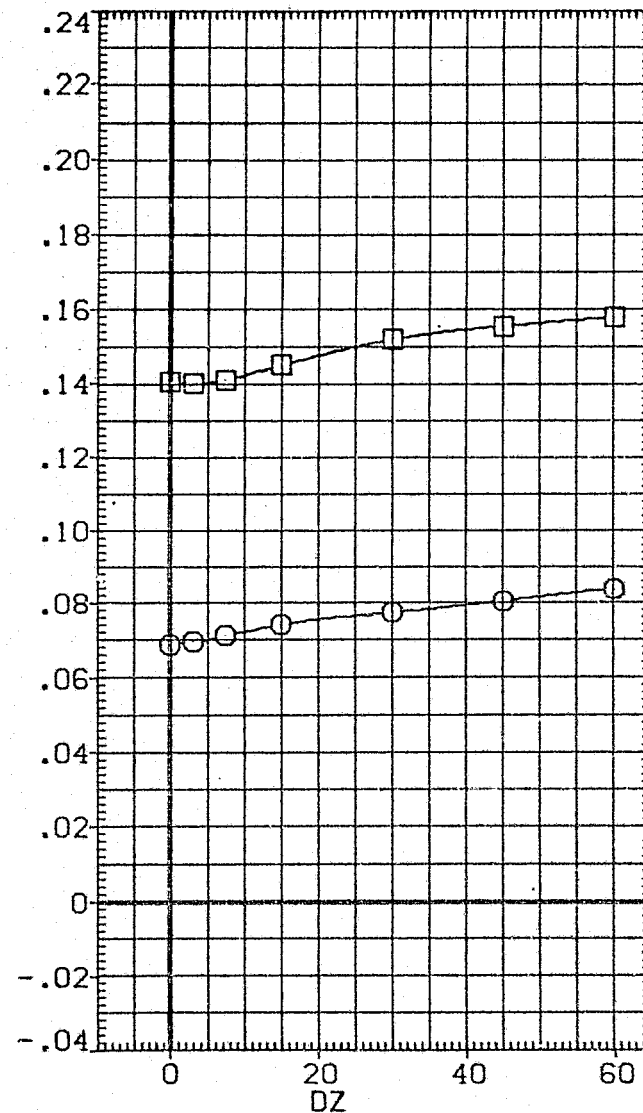
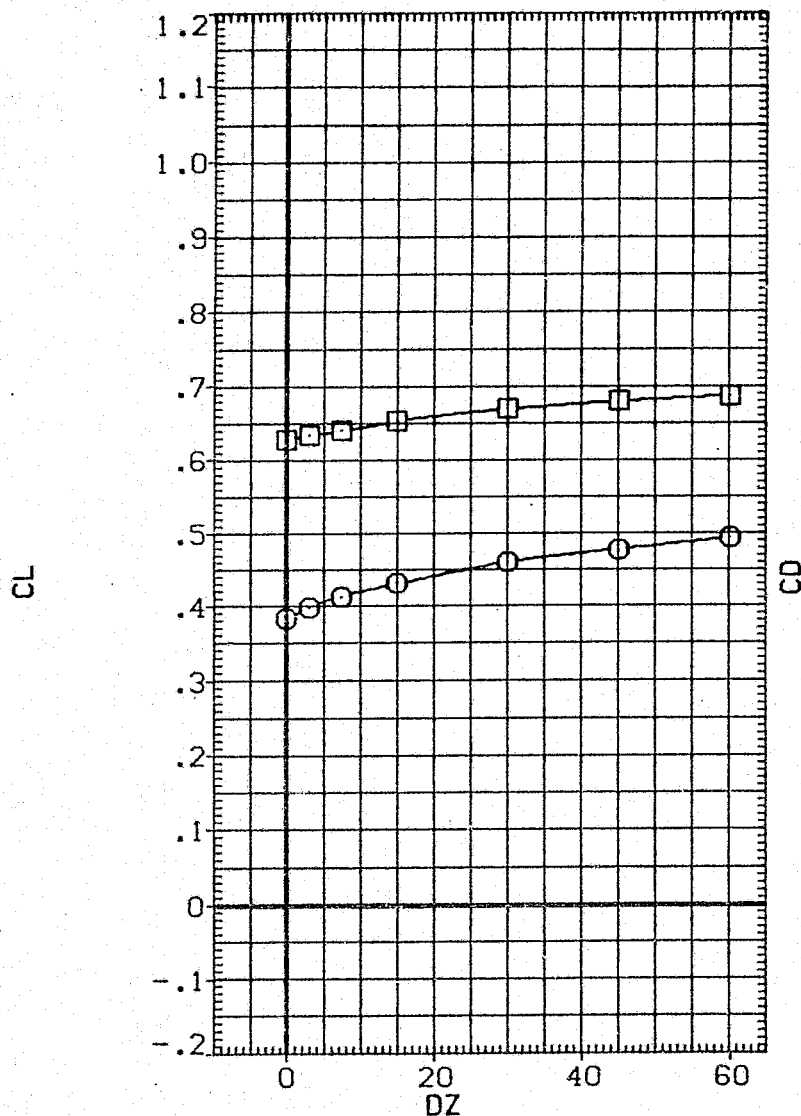


FIG. 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	
○	10.000		.000		3.000
□	14.000	ELEV0N	5.000	MACH	.600
		BETA0	.000	BETAC	5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

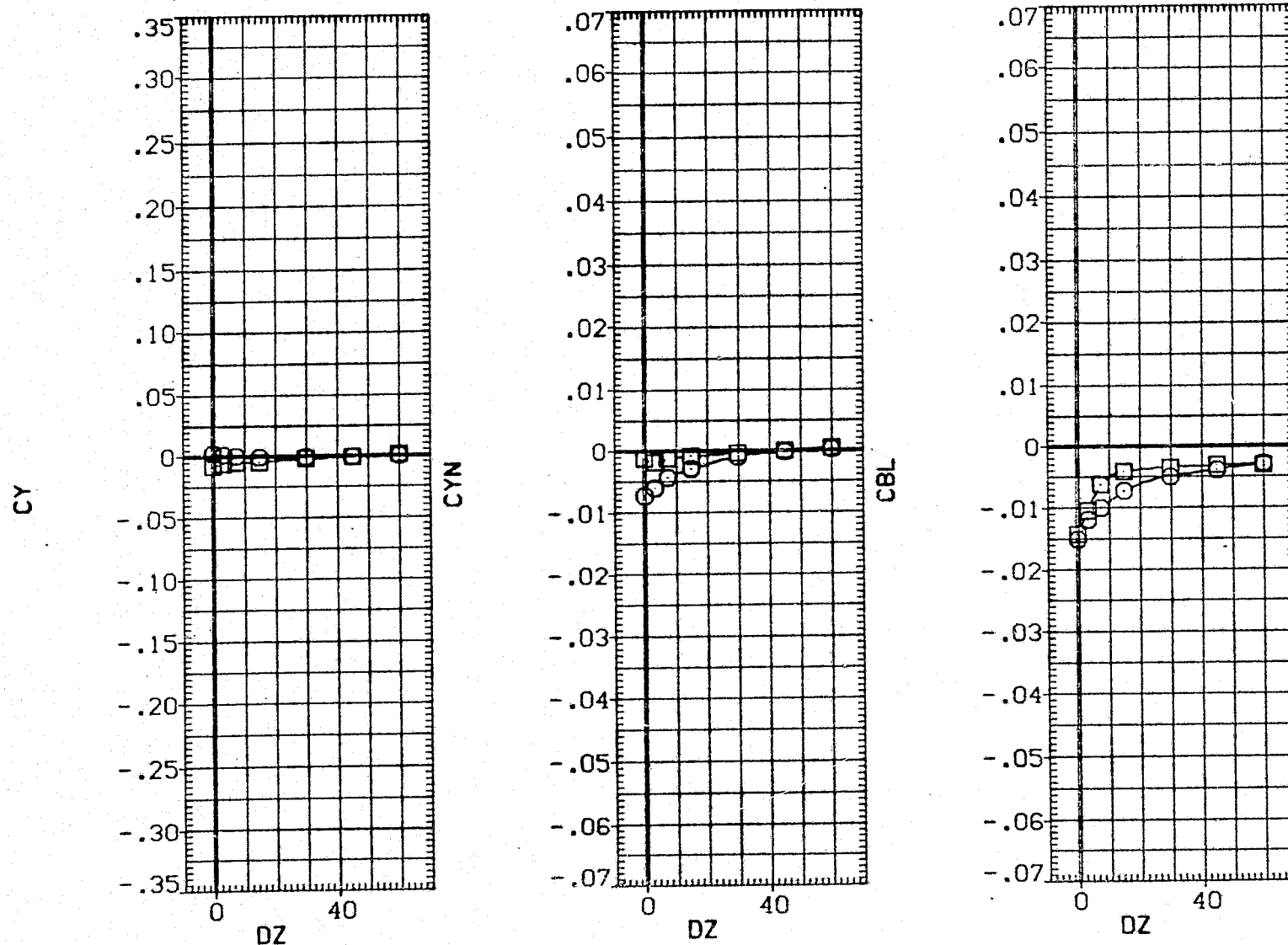


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (072 - 010) (VGN072)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

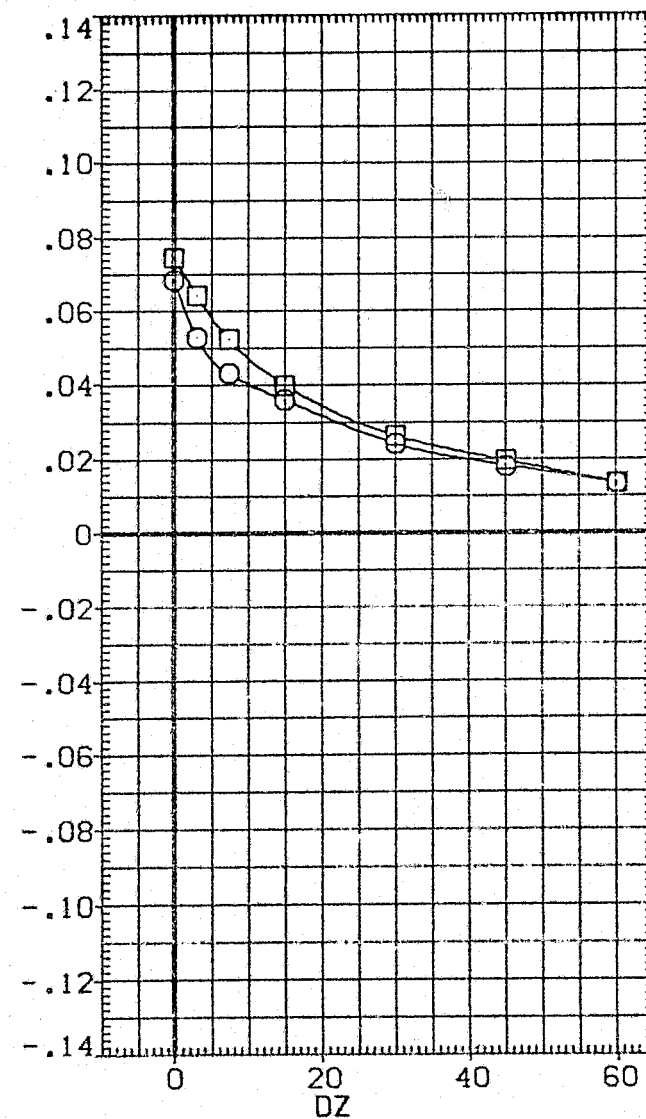
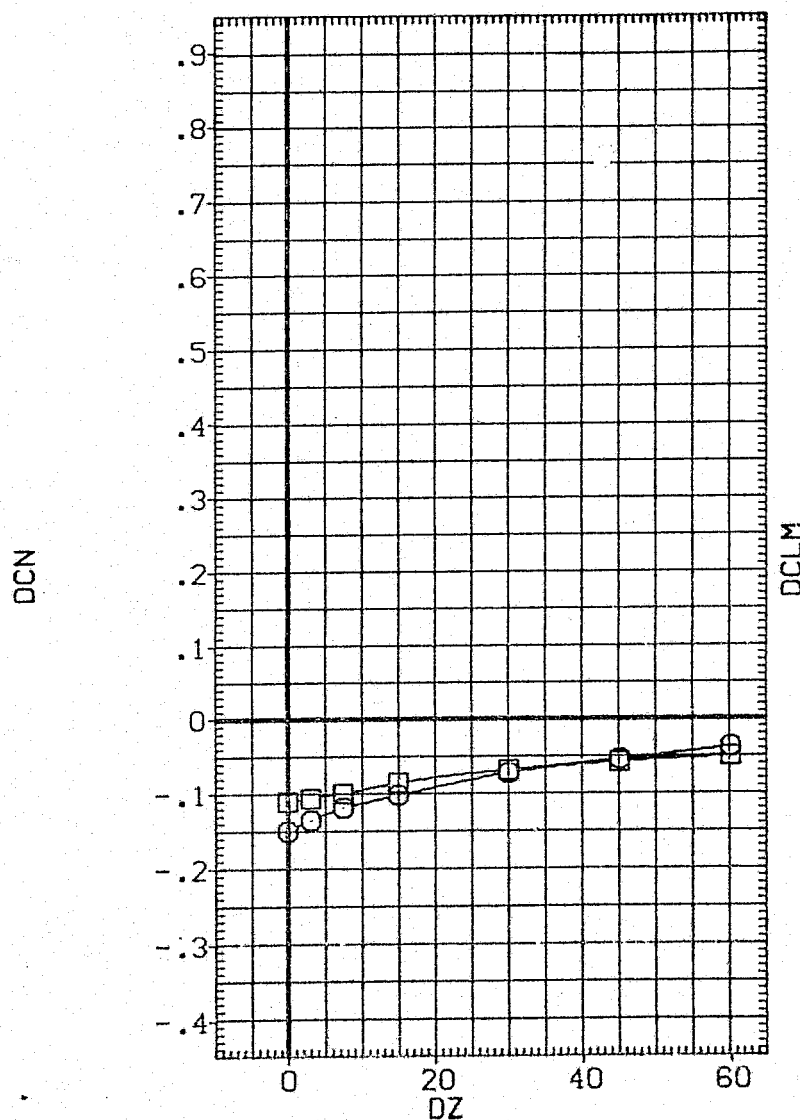


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 4.000	BETAC 5.000
□	14.000	ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		PHI .000	DX .000
		DY 10.000	BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

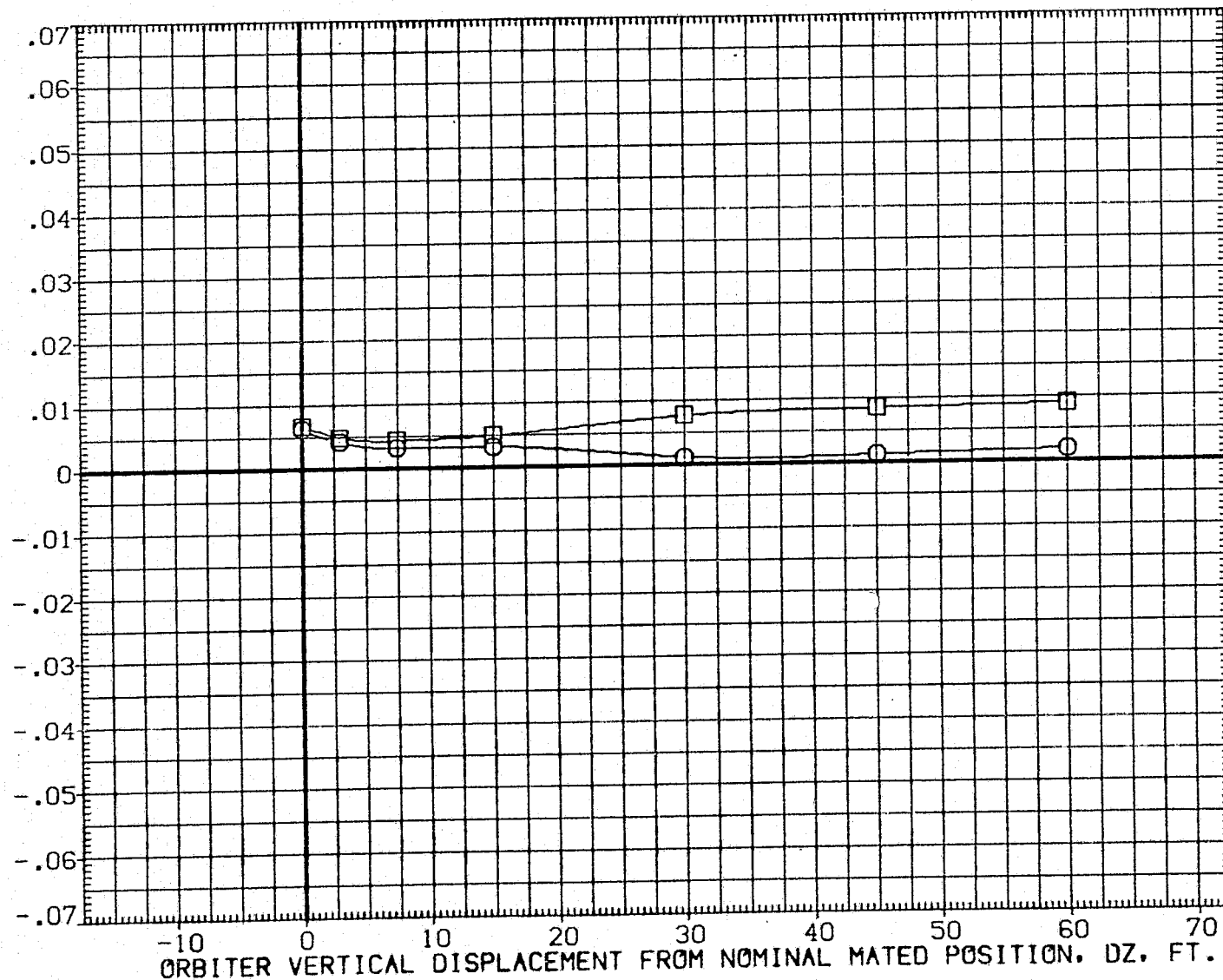


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (072 - 010) (VGN072)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC 5.000
□	14.000	ELV-1B .000 ELV-OB 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

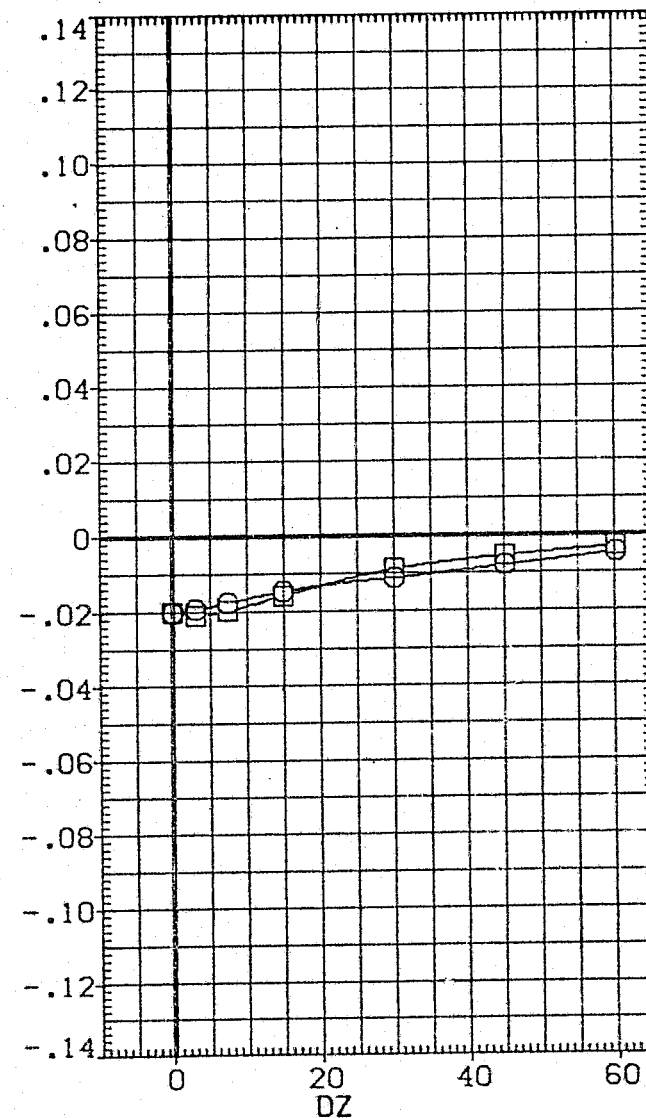
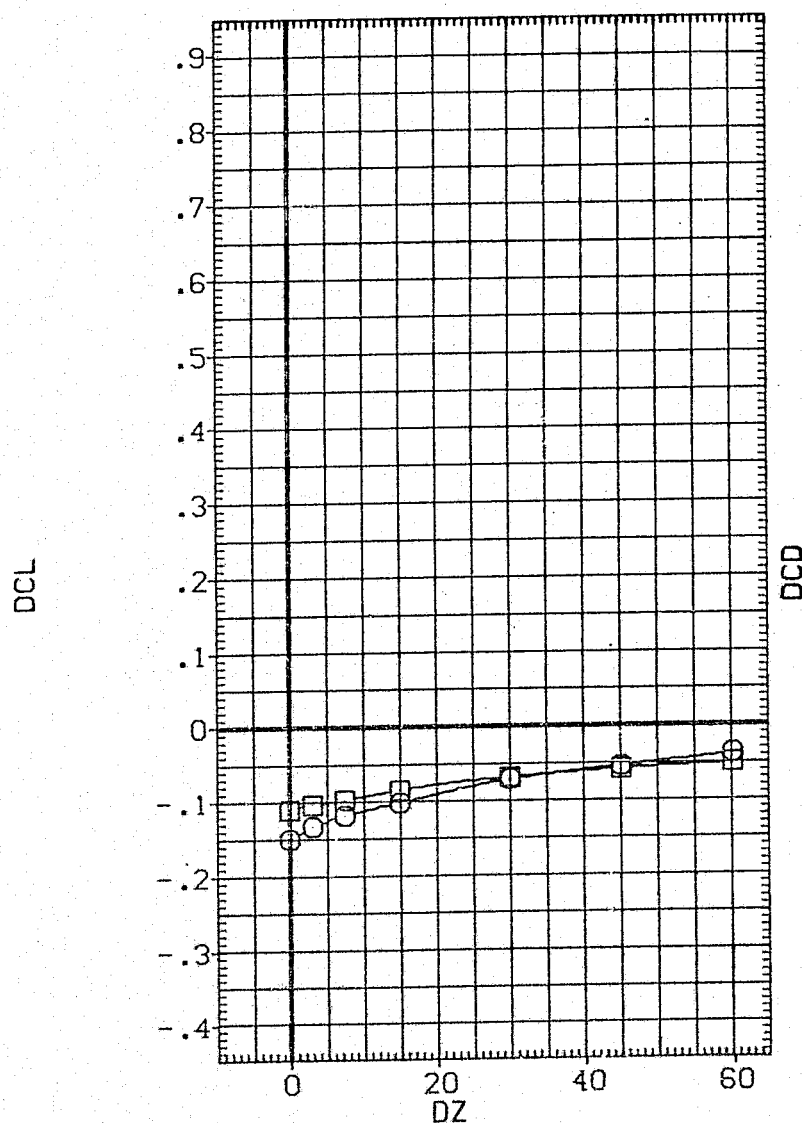


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES	
	10.000	ELV-1B	.000	ELV-0B
○	14.000	ELEVON	5.000	MACH
□		BETA0	.000	BETAC
		PHI	.000	DY
		DX	.000	ALPHAC

3.000
.600
5.000
10.000
8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

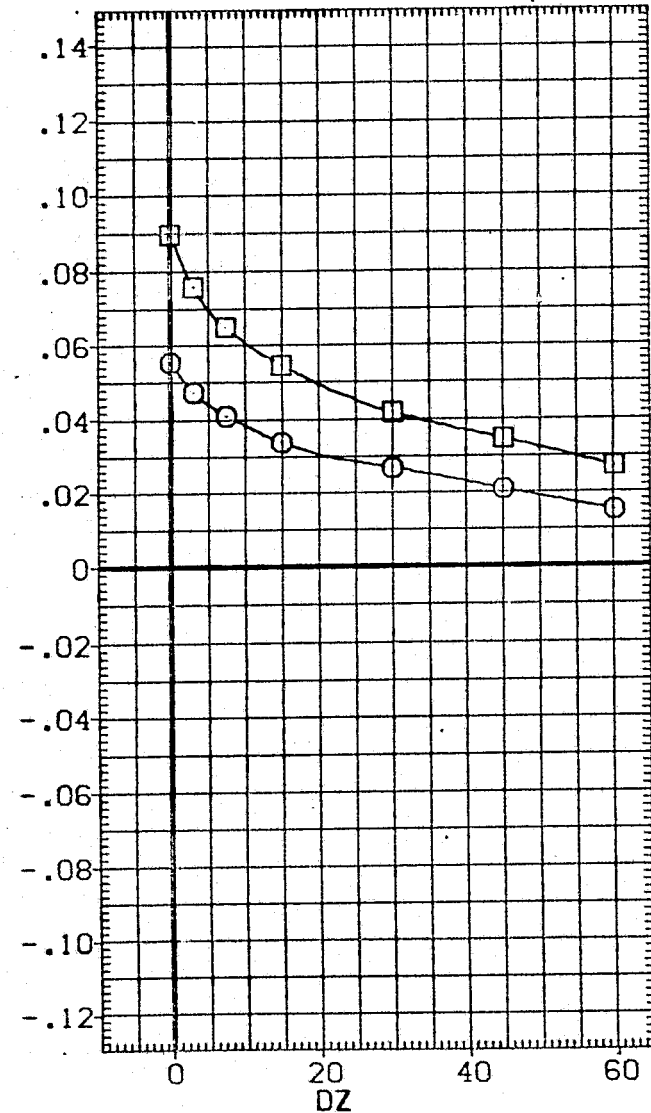
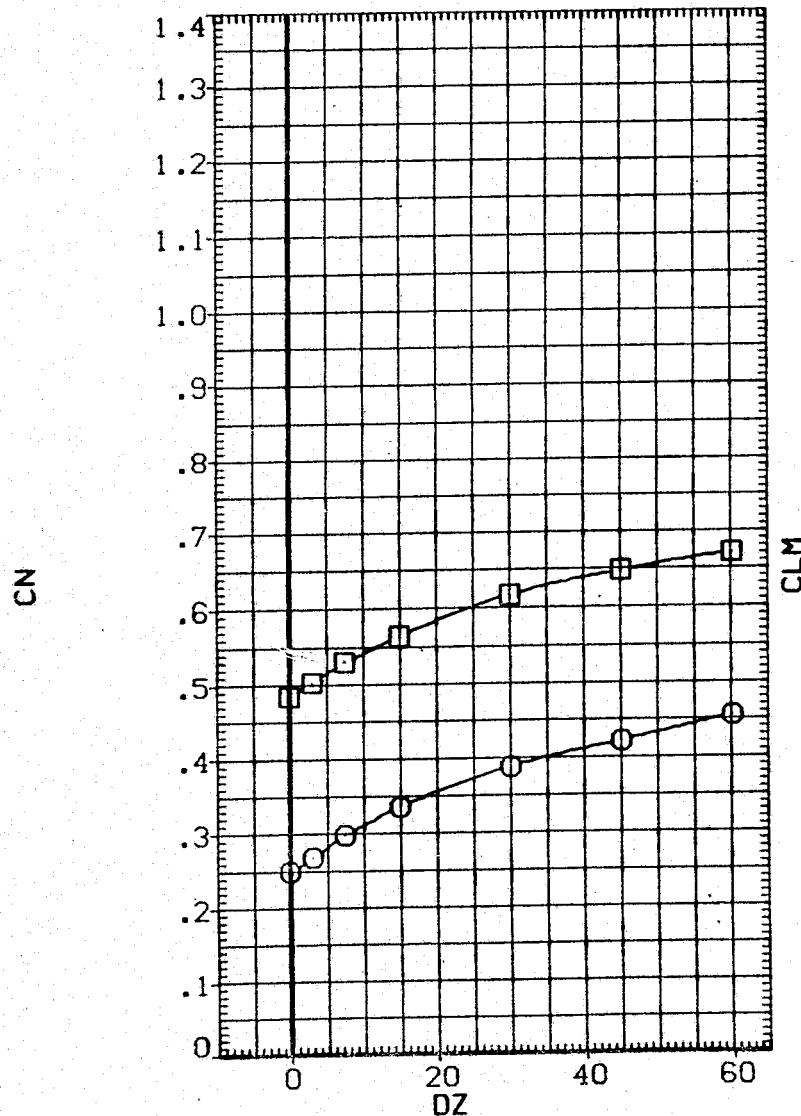


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN074)

SYMBOL

○

□

ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETAC

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

.000

.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

5.000

10.000

8.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

AXIAL FORCE COEFFICIENT, CA

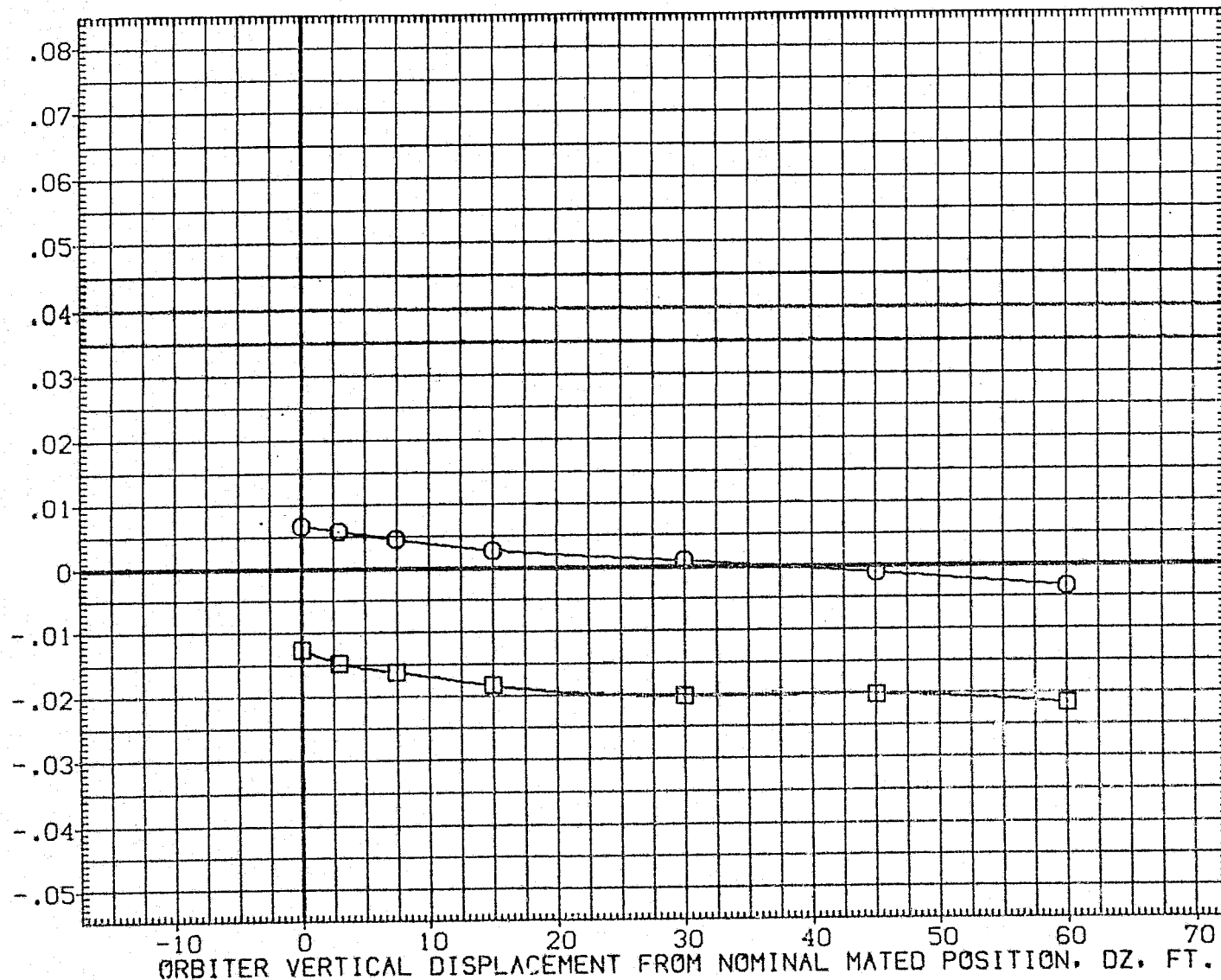


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETAC	.000	BETAC	5.000
		PHI	.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

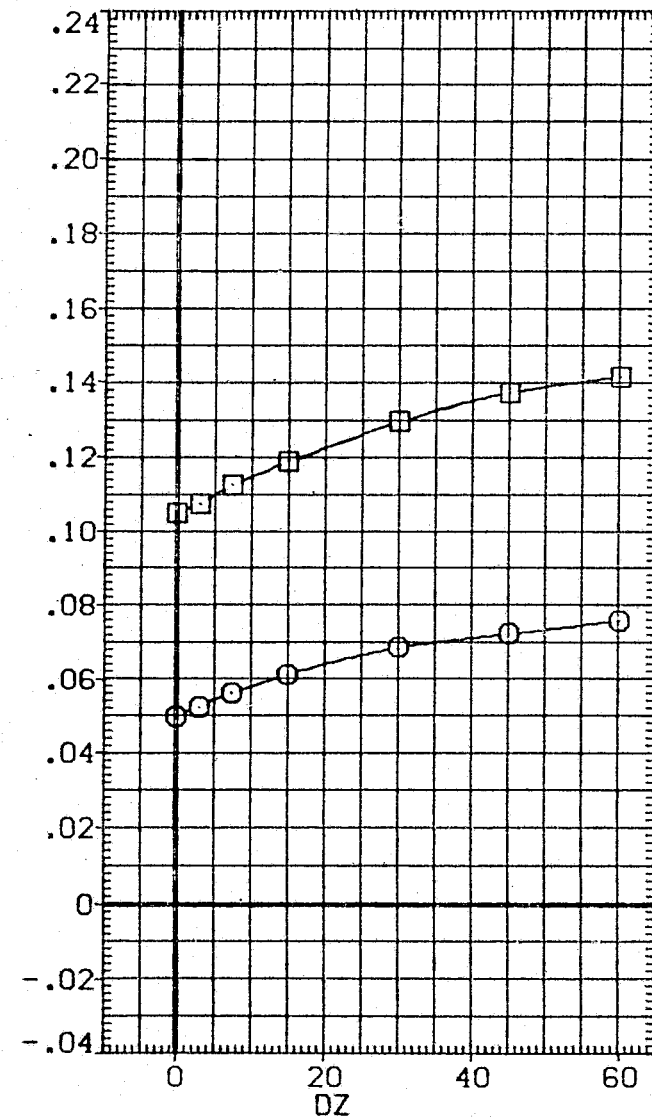
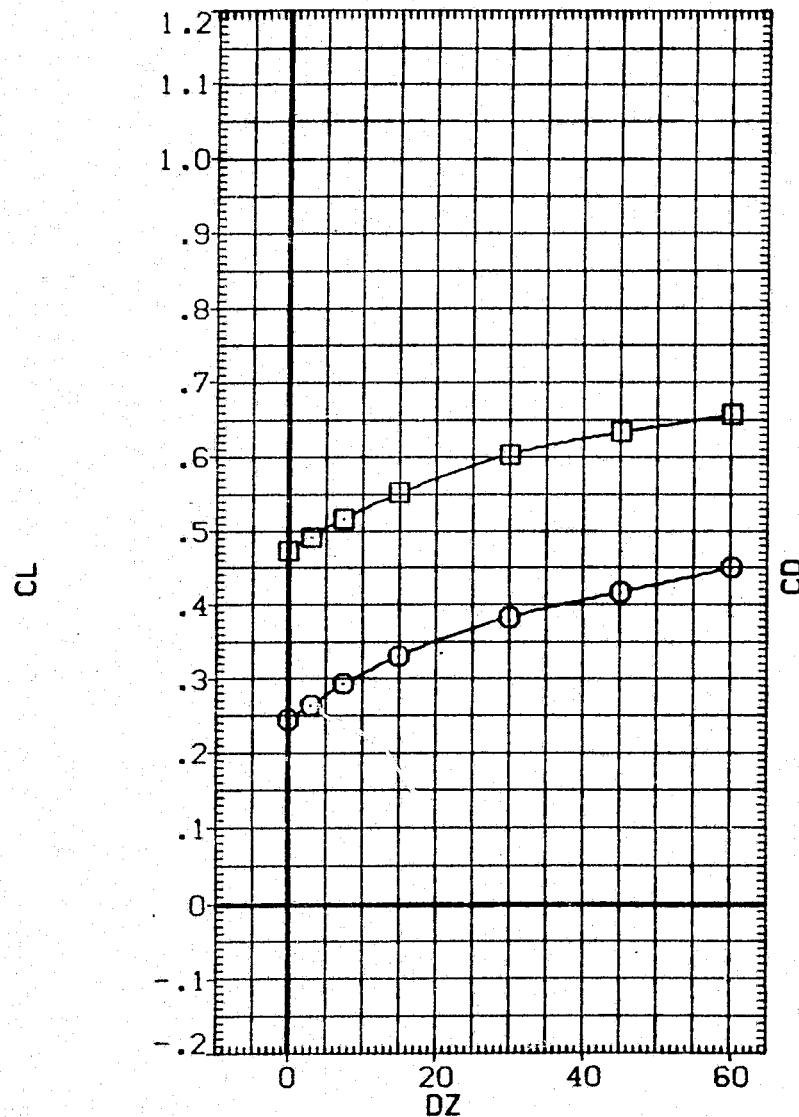


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN074)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	14.000	ELV-18	.000	ELV-08	3.000
○			ELEVON	5.000	MACH	.600
□			BETA0	.000	BETAC	5.000
			PHI	.000	DY	10.000
			DX	.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

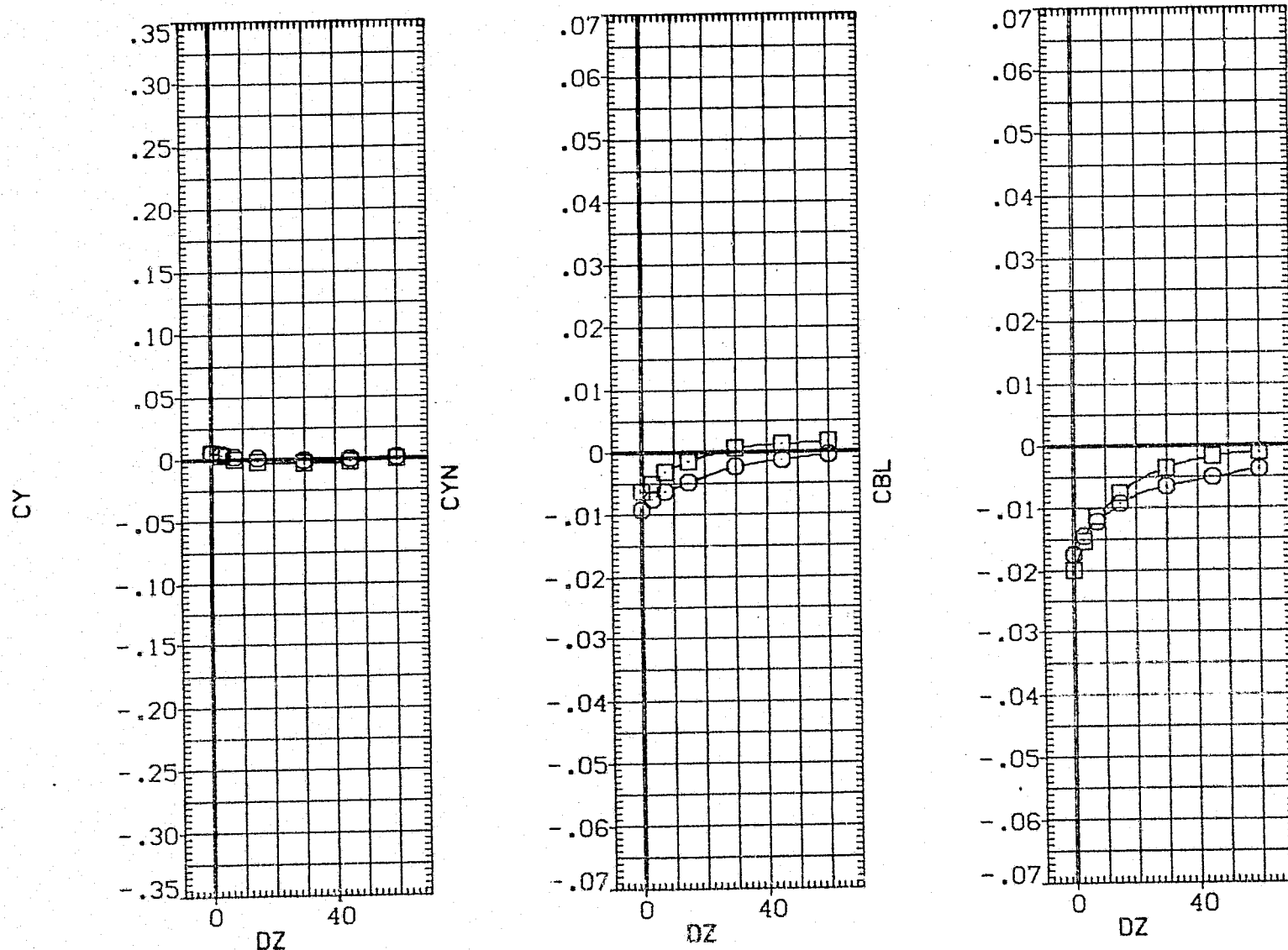


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

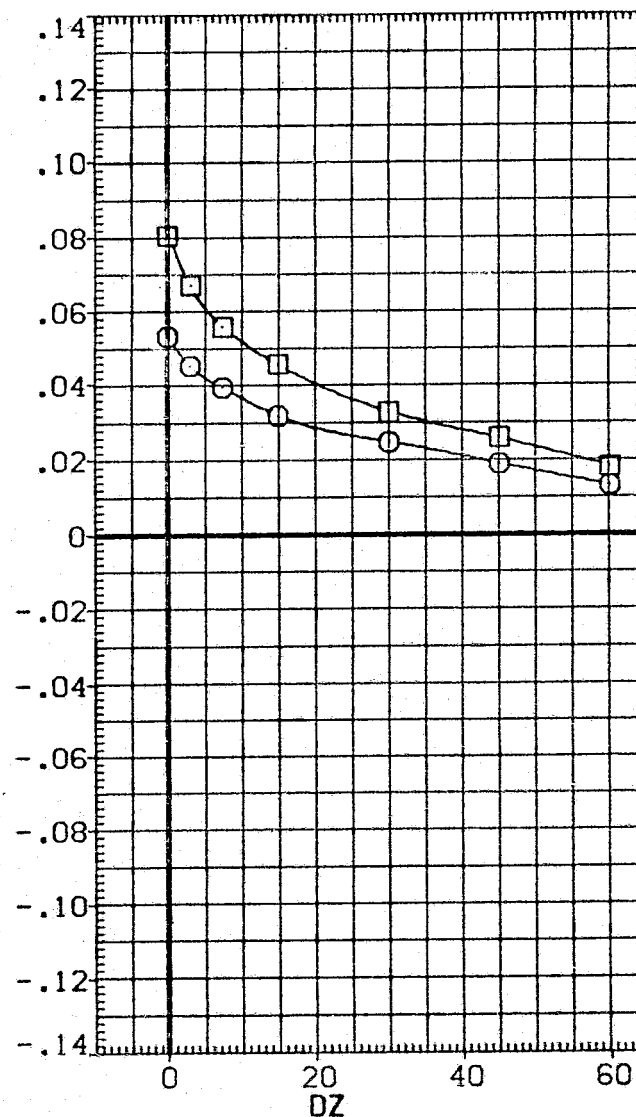
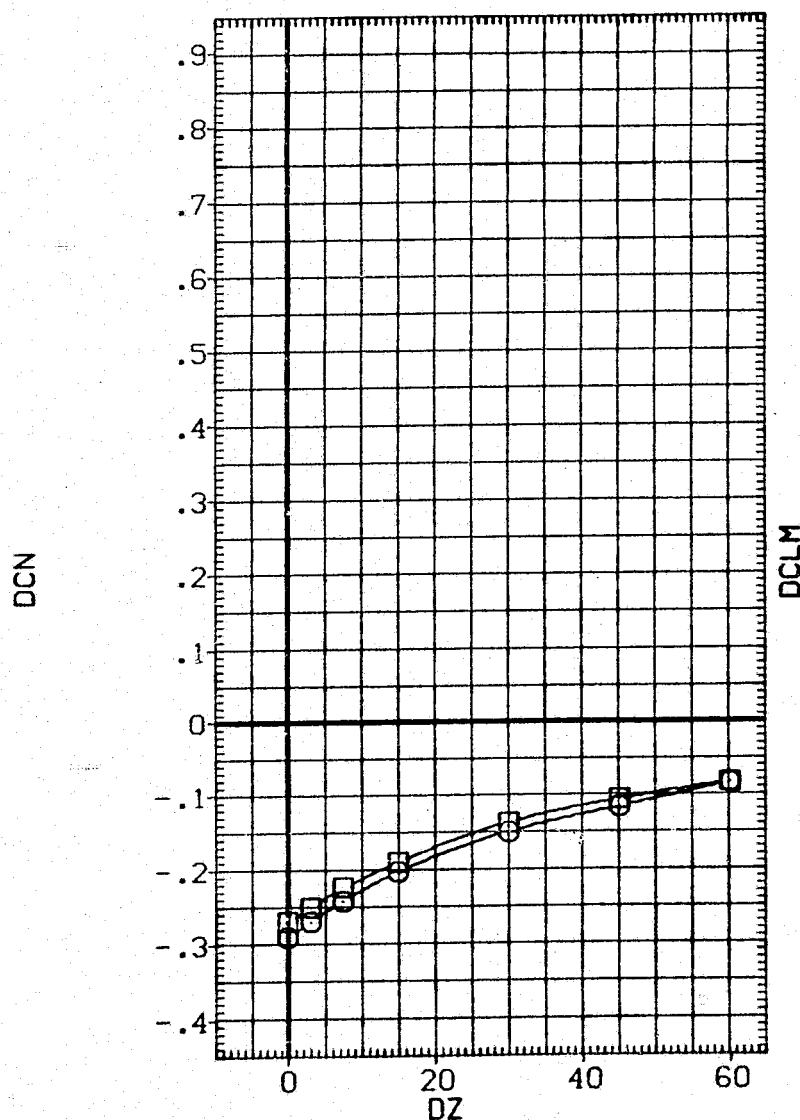


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (074 - 010)(VGN074)

SYMBOL

○

□

ALPHA0

10.000

14.000

ALPHAC

8.000

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

BETAC

ELV-0B

MACH

DX

BETA0

5.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

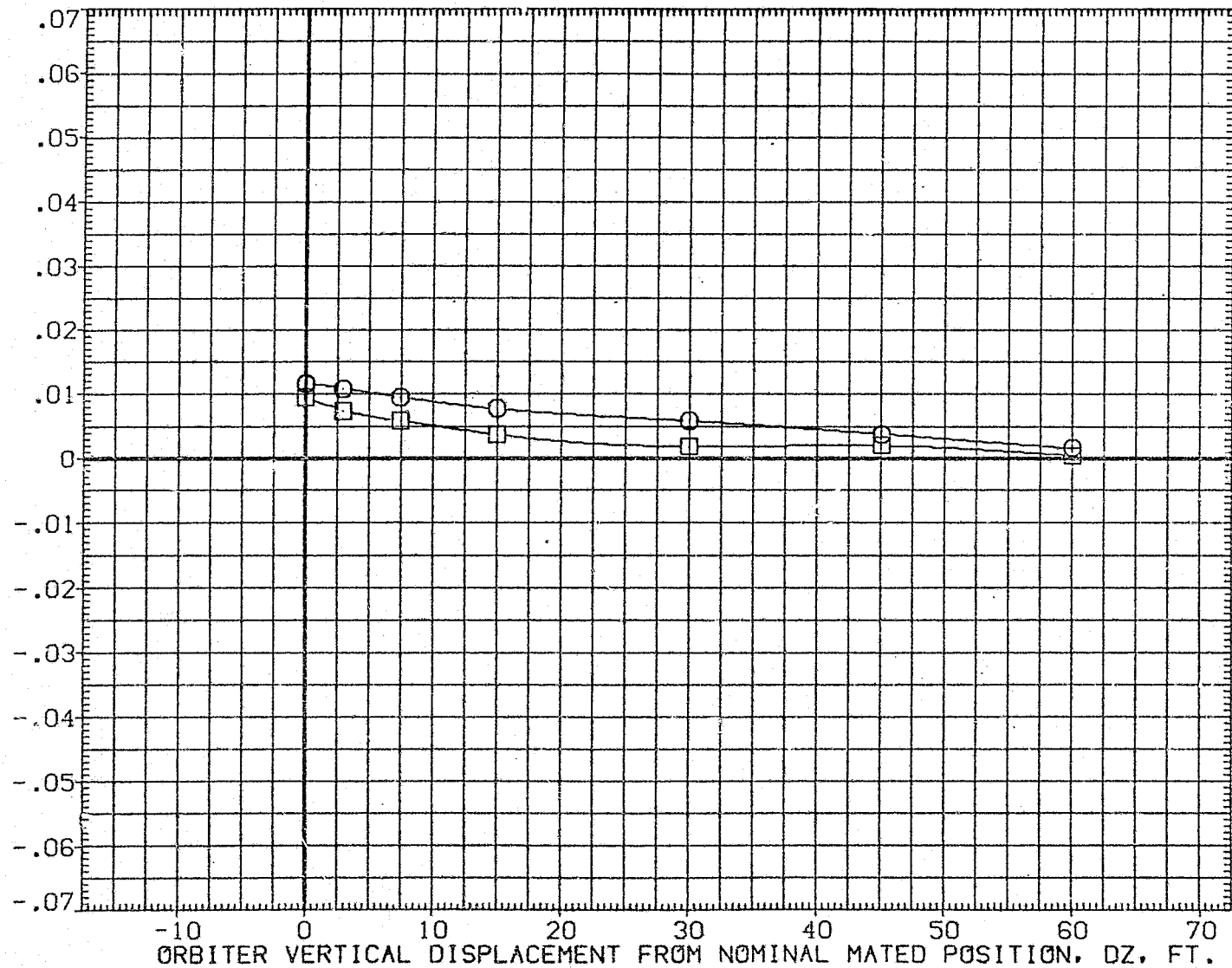


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○

□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

10.000

BETAC

ELV-OB

MACH

DX

BETA0

5.000

3.000

.600

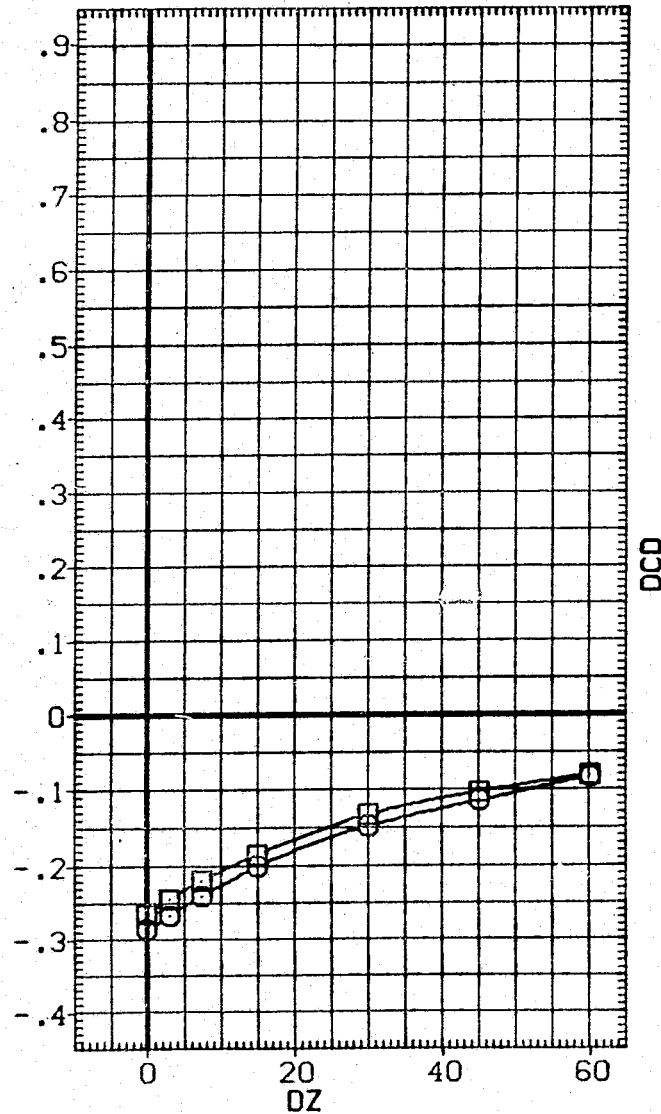
.000

.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL



DCD

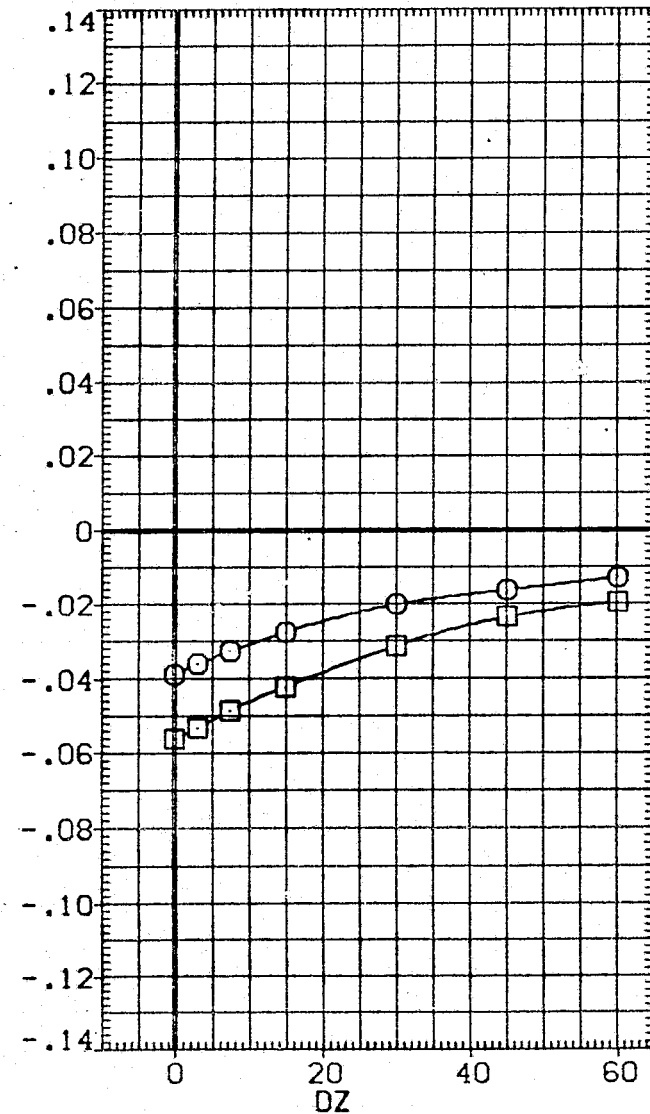


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN073)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	5.000
		PHI	.000	DY	10.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

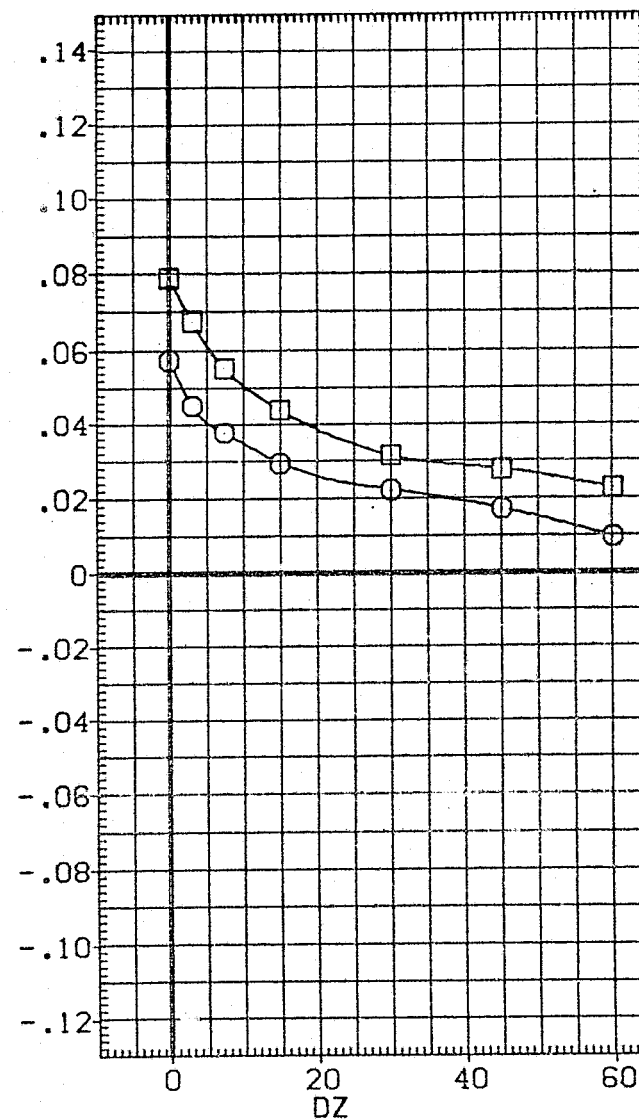
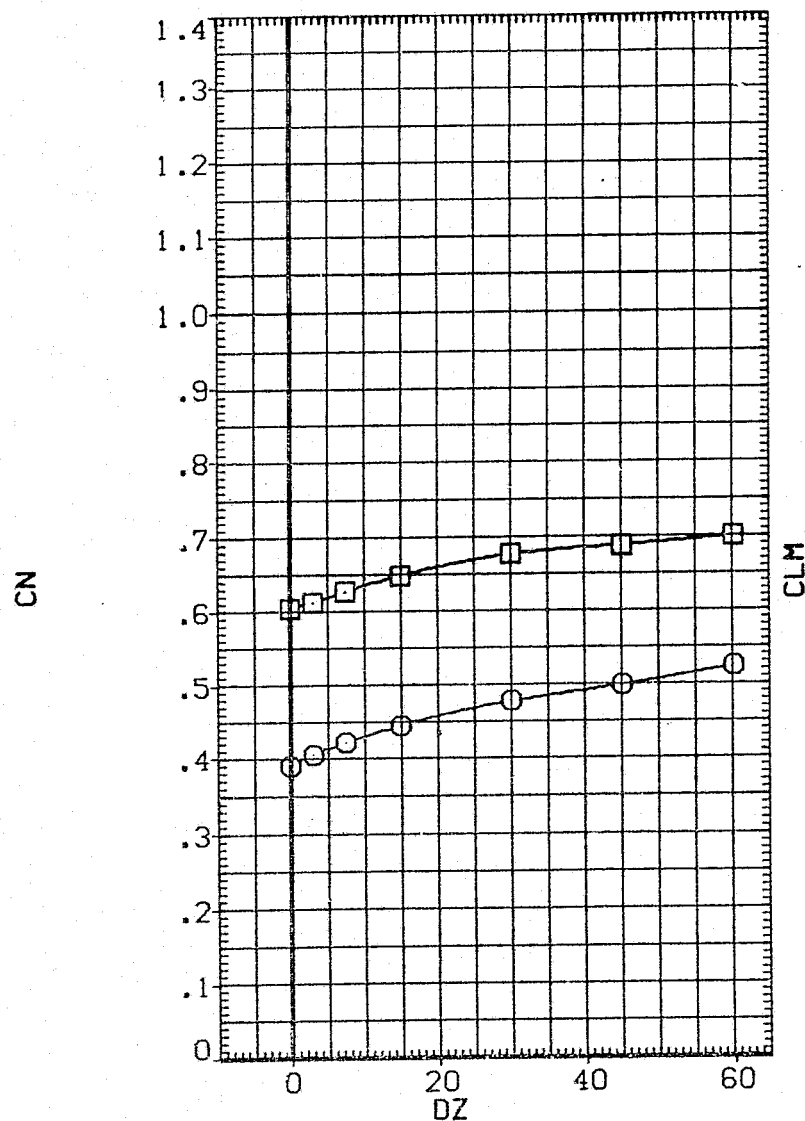


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC 5.000
		PHI .000 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

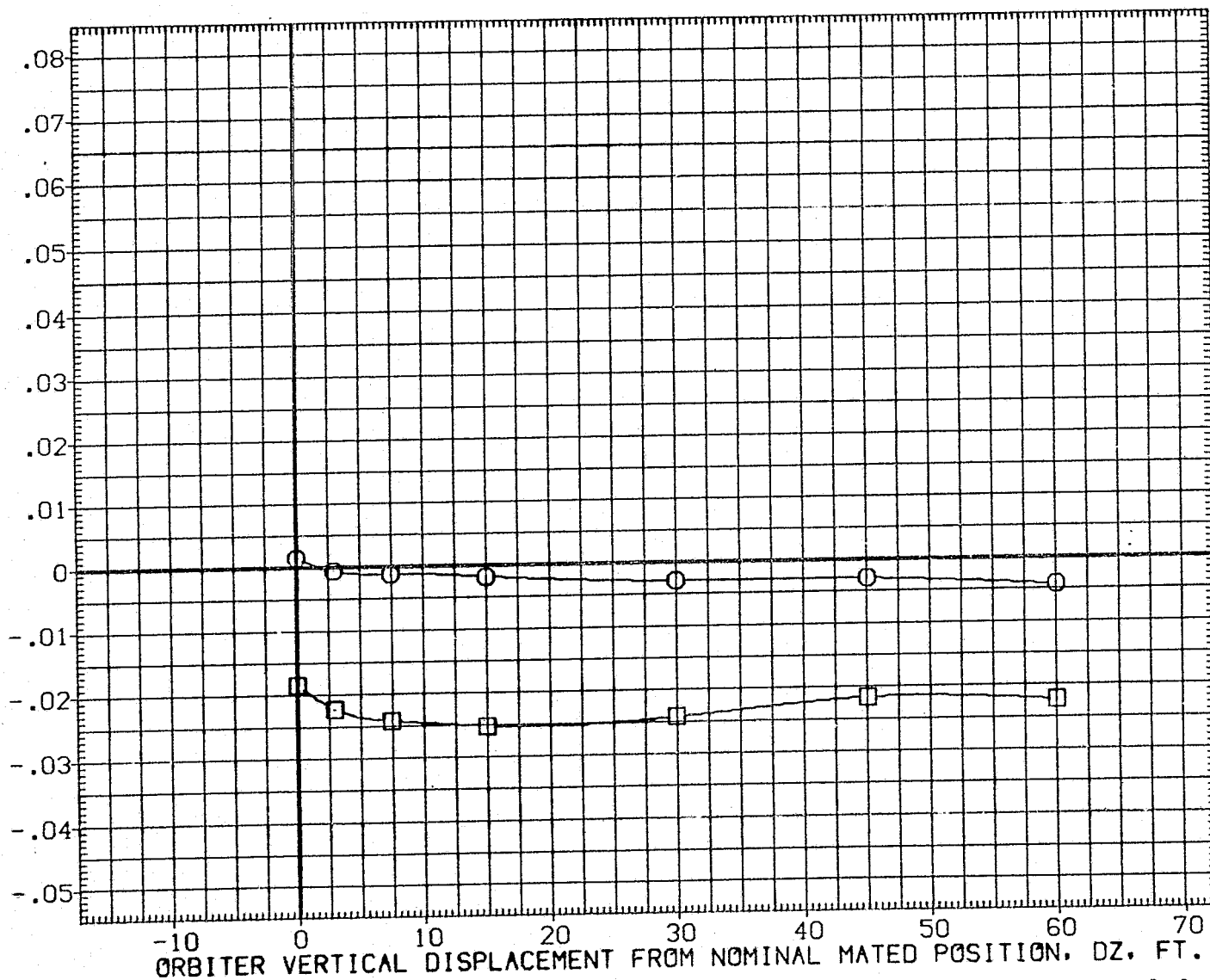


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN073)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC 5.000
		PHI .000 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

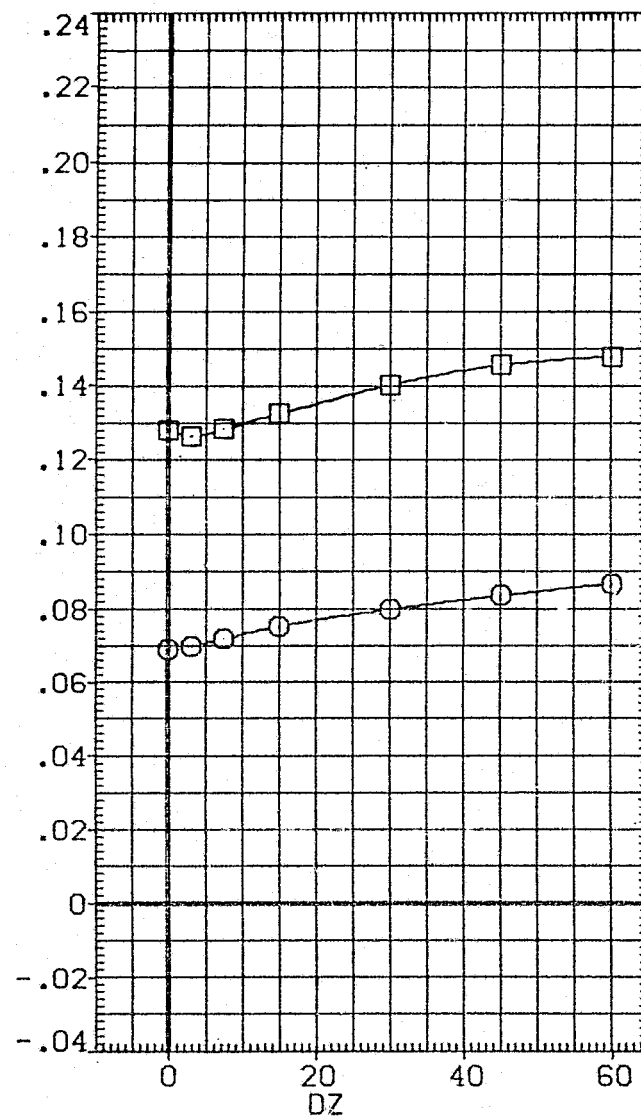
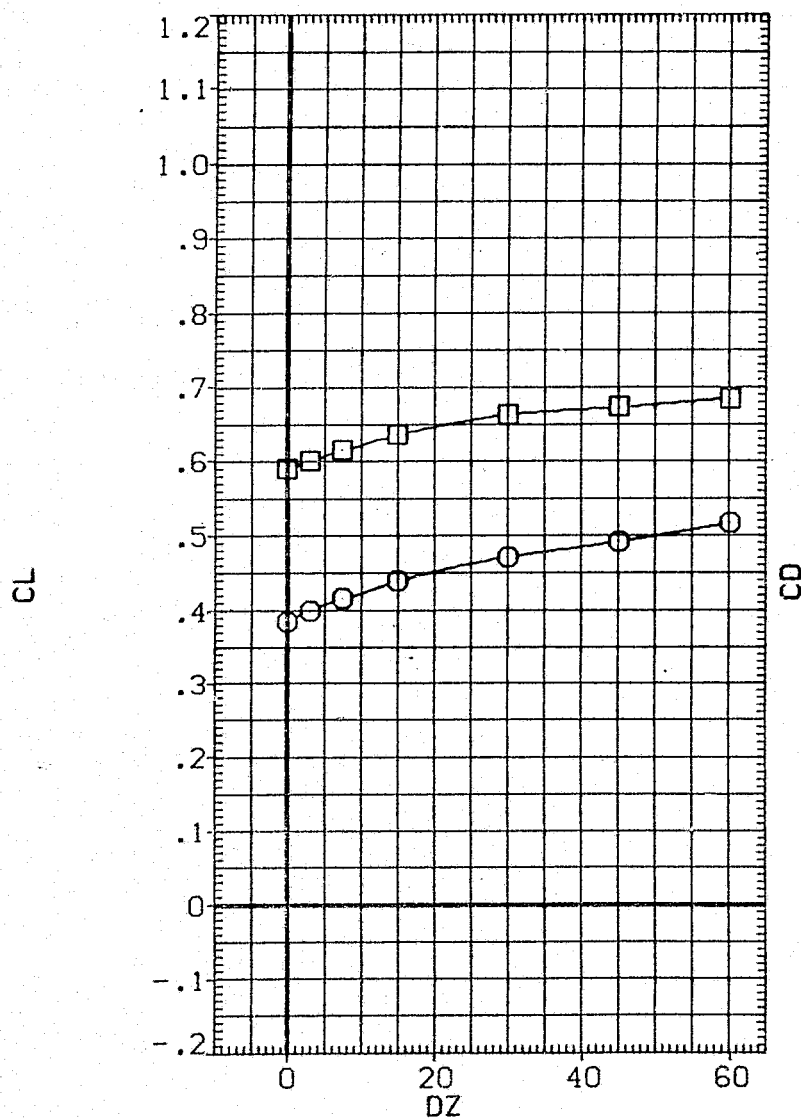


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	.000	ELV-0B	3.000
□	14.000	5.000	MACH	.600
		.000	BETAC	5.000
		.000	DY	10.000
		10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

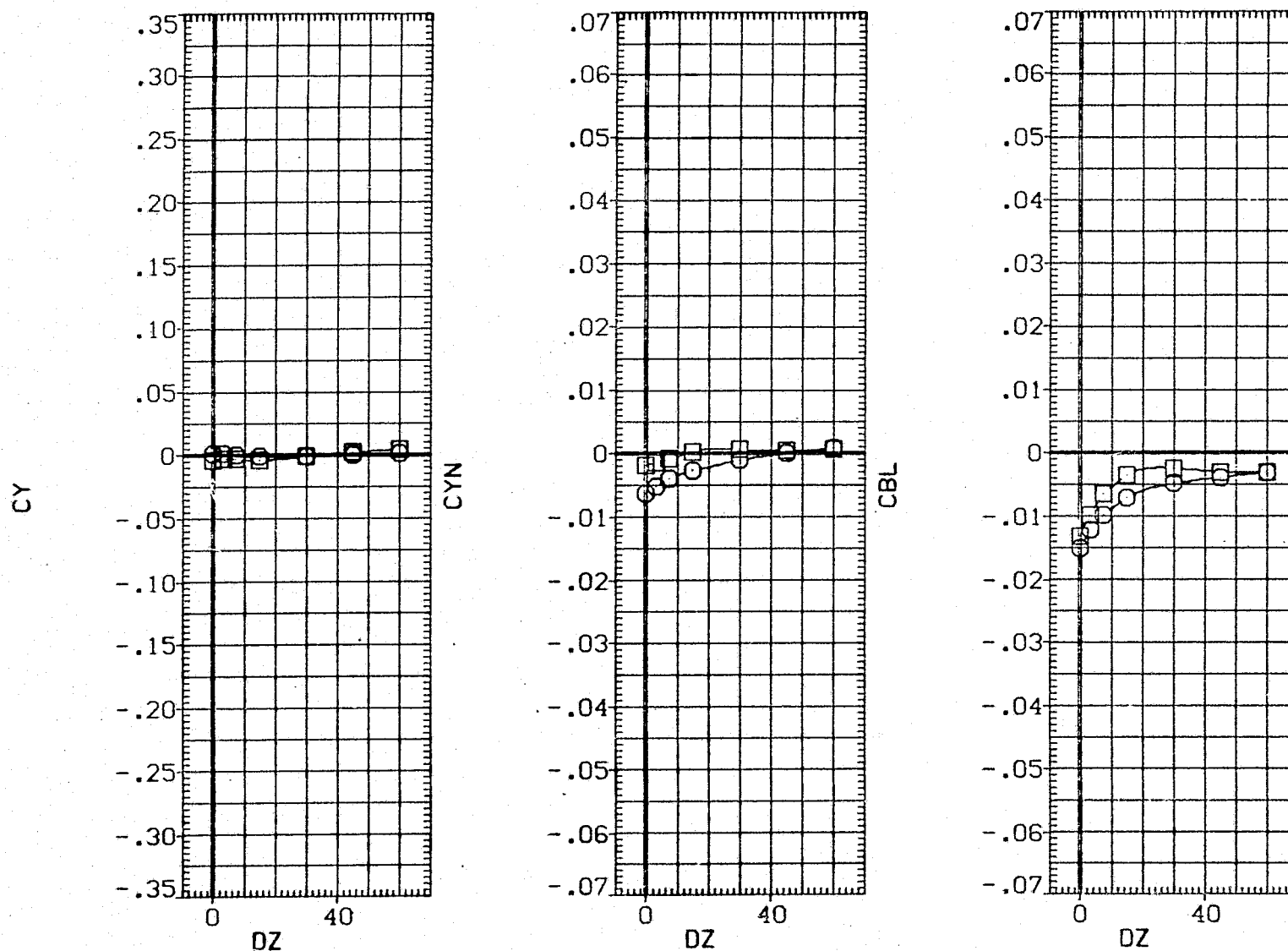


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (073 - 010(VGN073))

SYMBOL

○
□

ALPHA0

10.000

14.000

PARAMETRIC VALUES

ALPHAC

4.000

BETAC

5.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

HACH

.600

PHI

.000

DX

10.000

DY

10.000

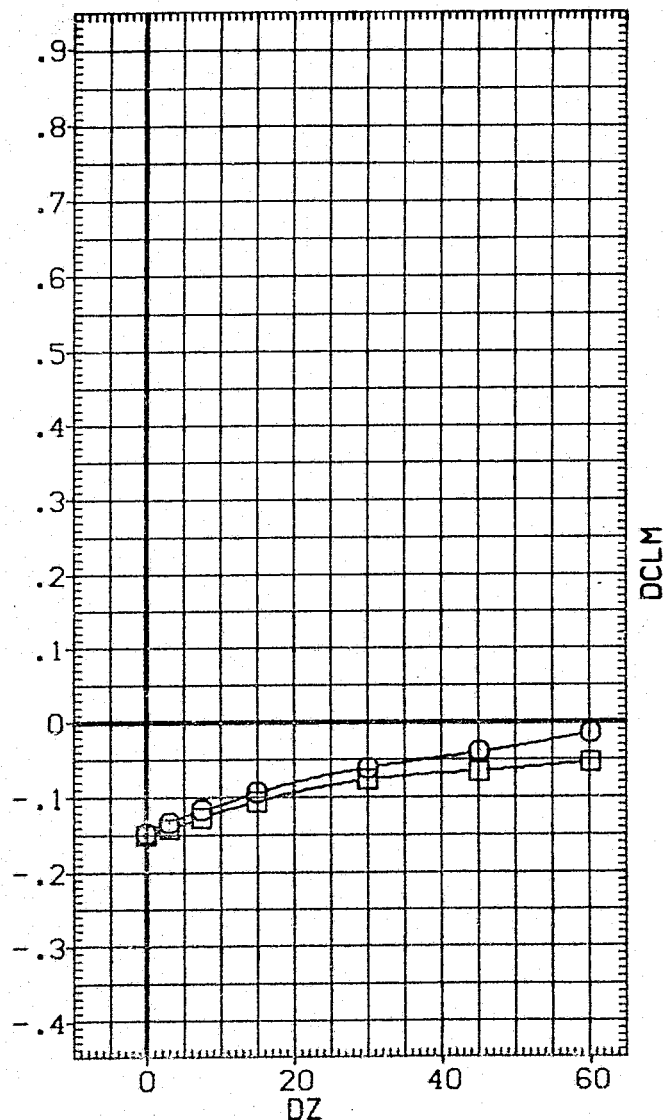
BETA0

.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

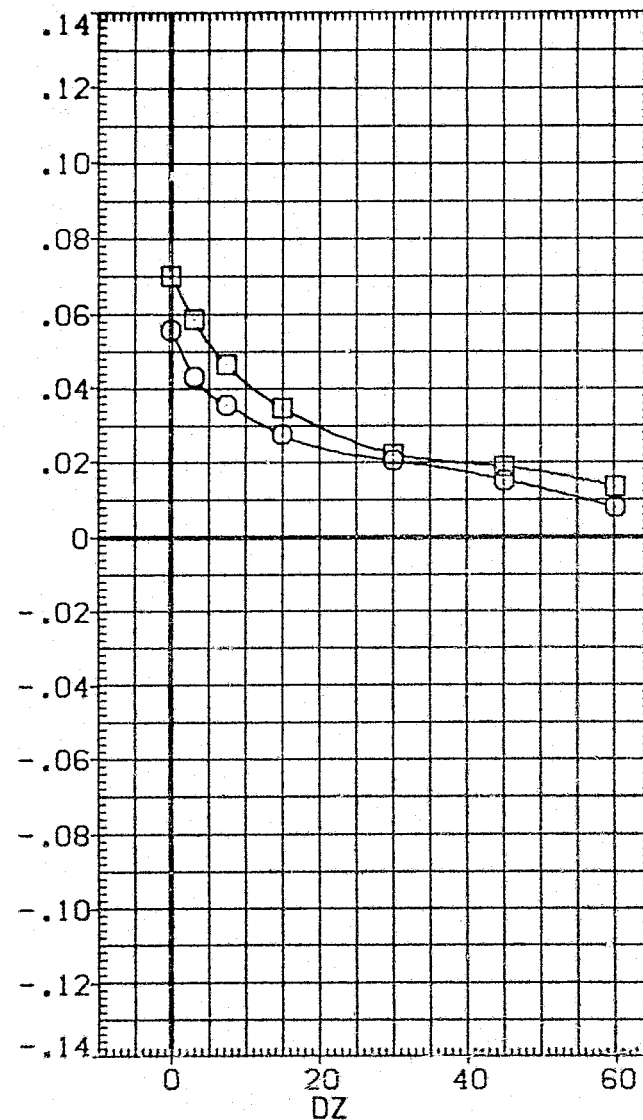


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

10.000

BETAC

ELV-0B

MACH

DX

BETA0

5.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF

2690.000G

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

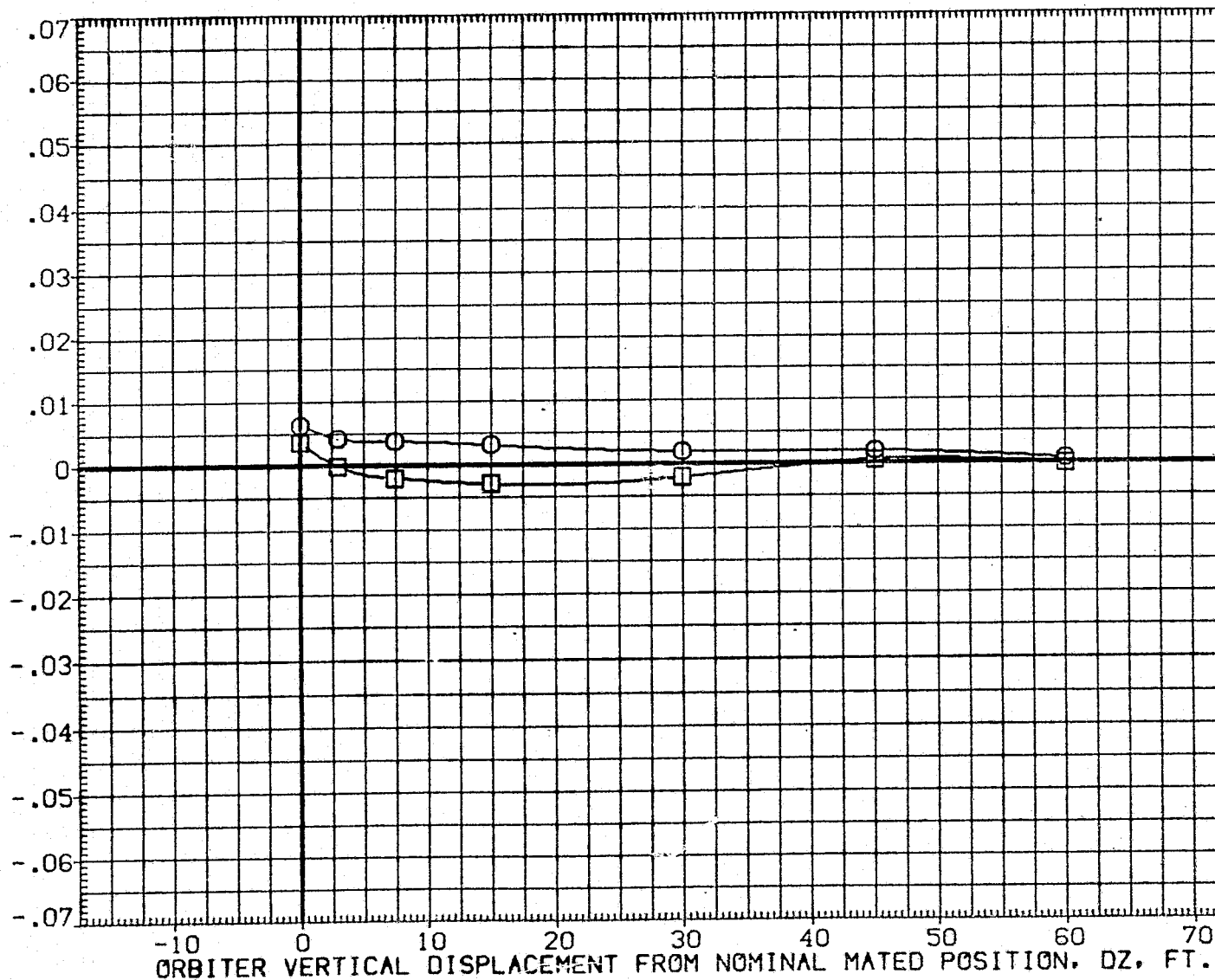


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (073 - 010(VGN073))

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

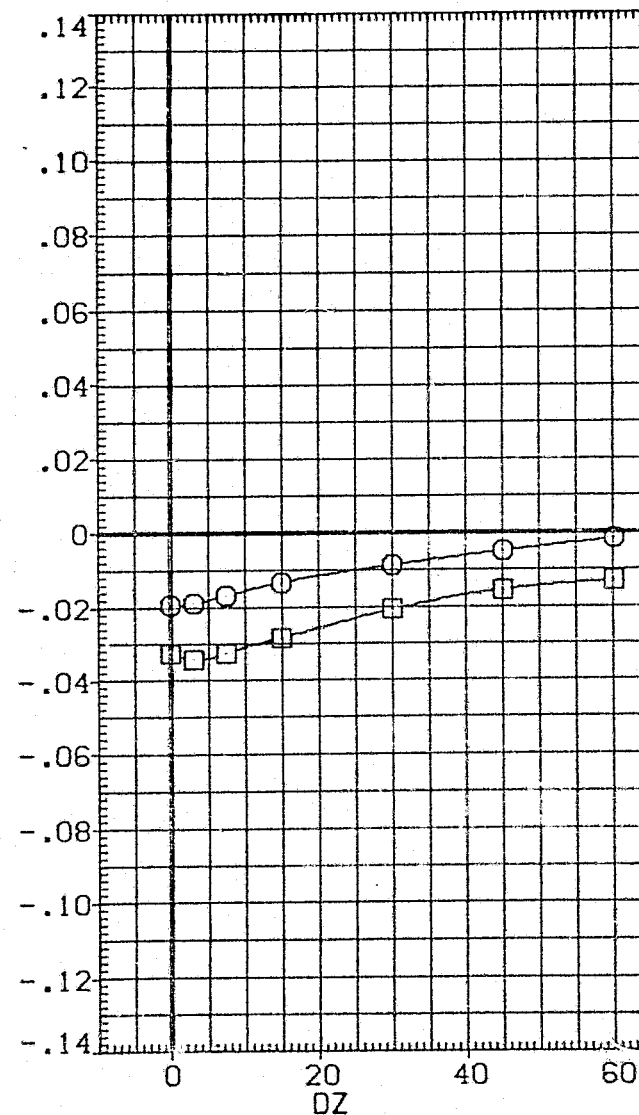
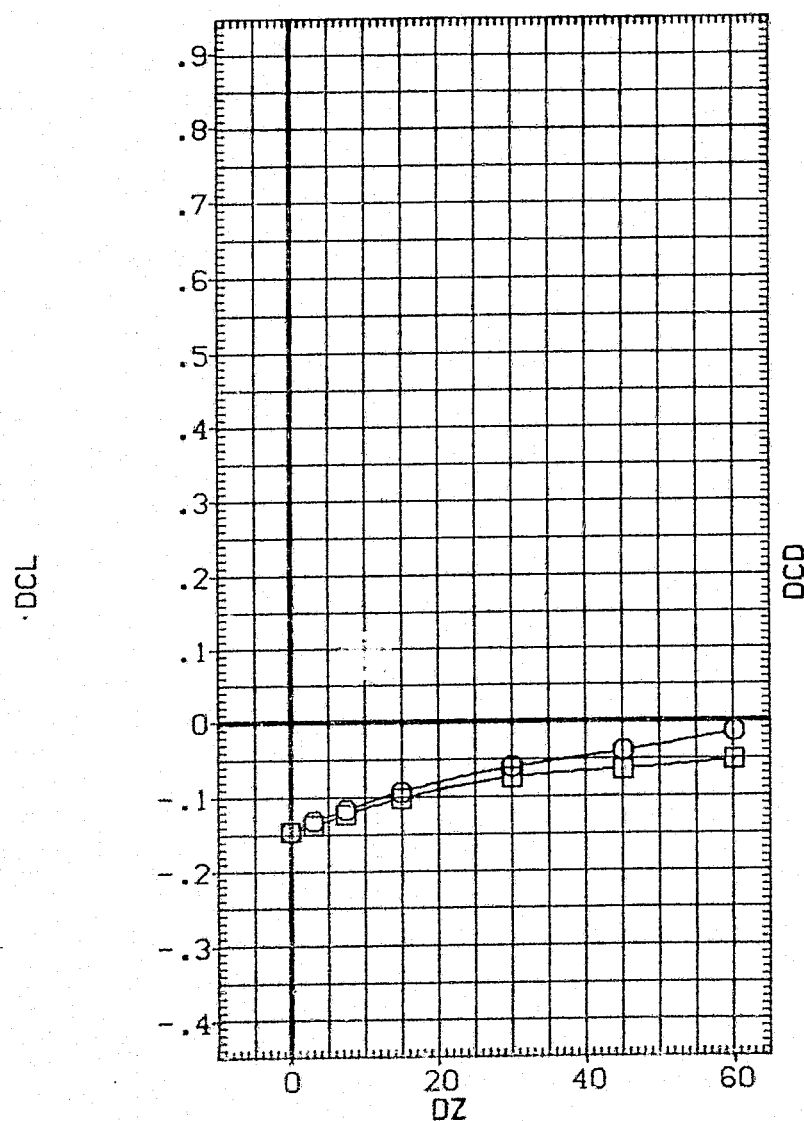


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	5.000
		PHI	.000	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

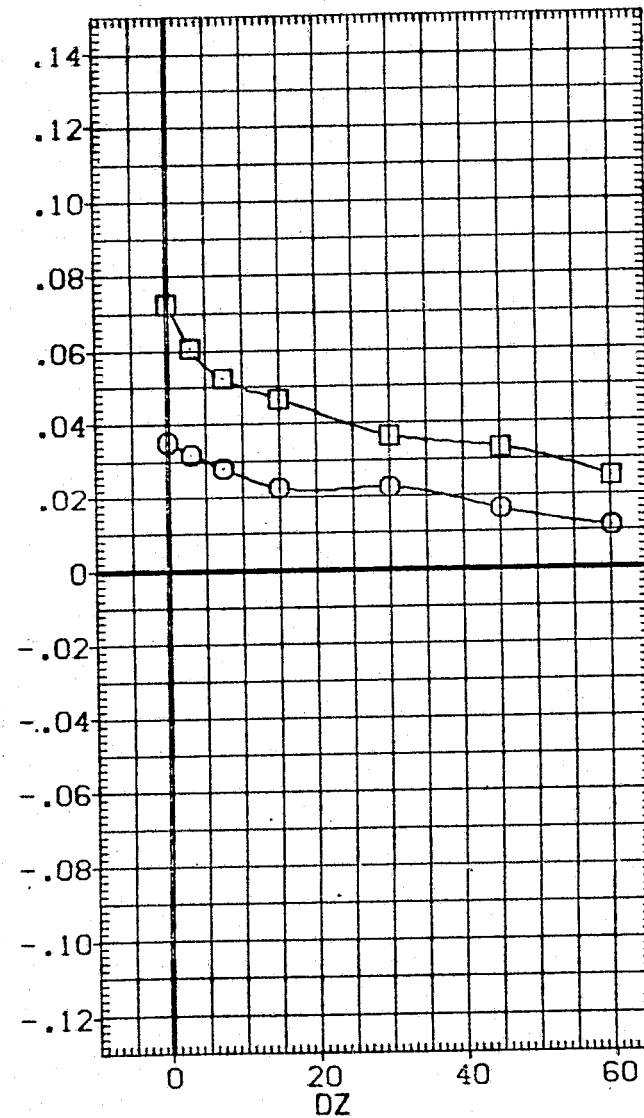
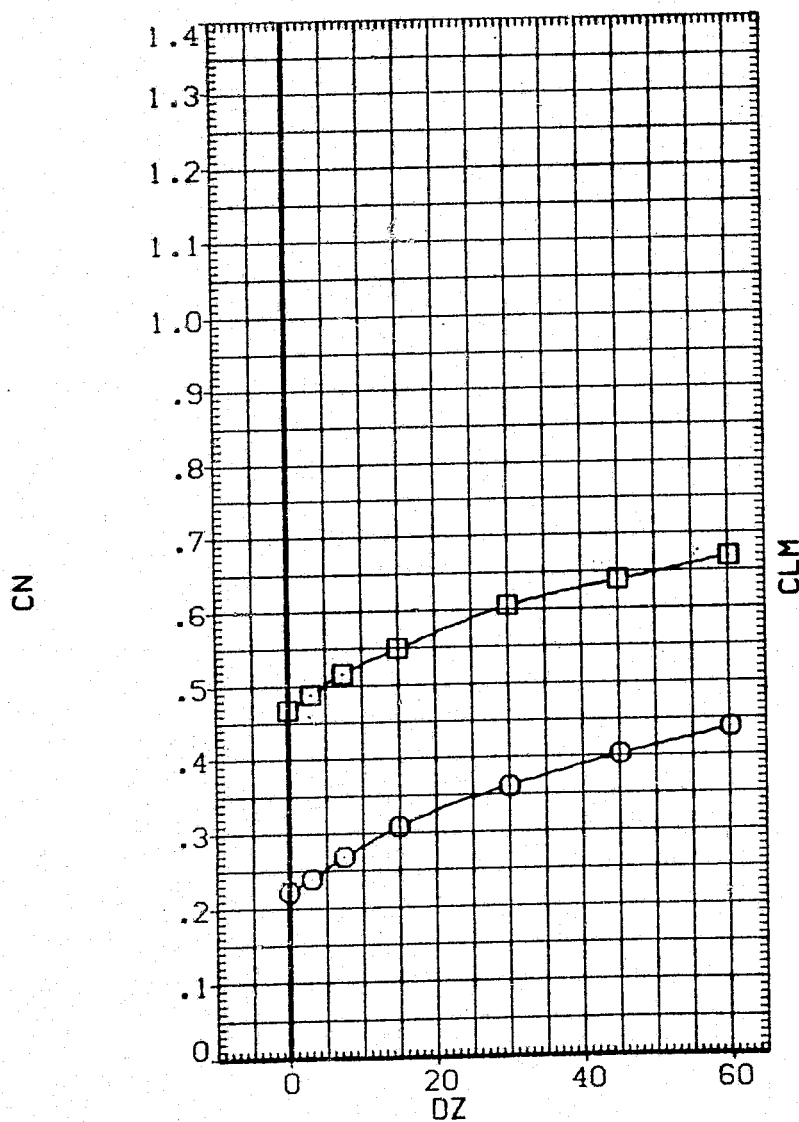


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN075)

SYMBOL ALPHAO

○

10.000

□

14.000

ELV-IB

PARAMETRIC VALUES

.000

ELV-OB

3.000

ELEVON

5.000

MACH

.600

BETA0

.000

BETAC

5.000

PHI

.000

DY

10.000

DX

10.000

ALPHAC

8.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

AXIAL FORCE COEFFICIENT, CA

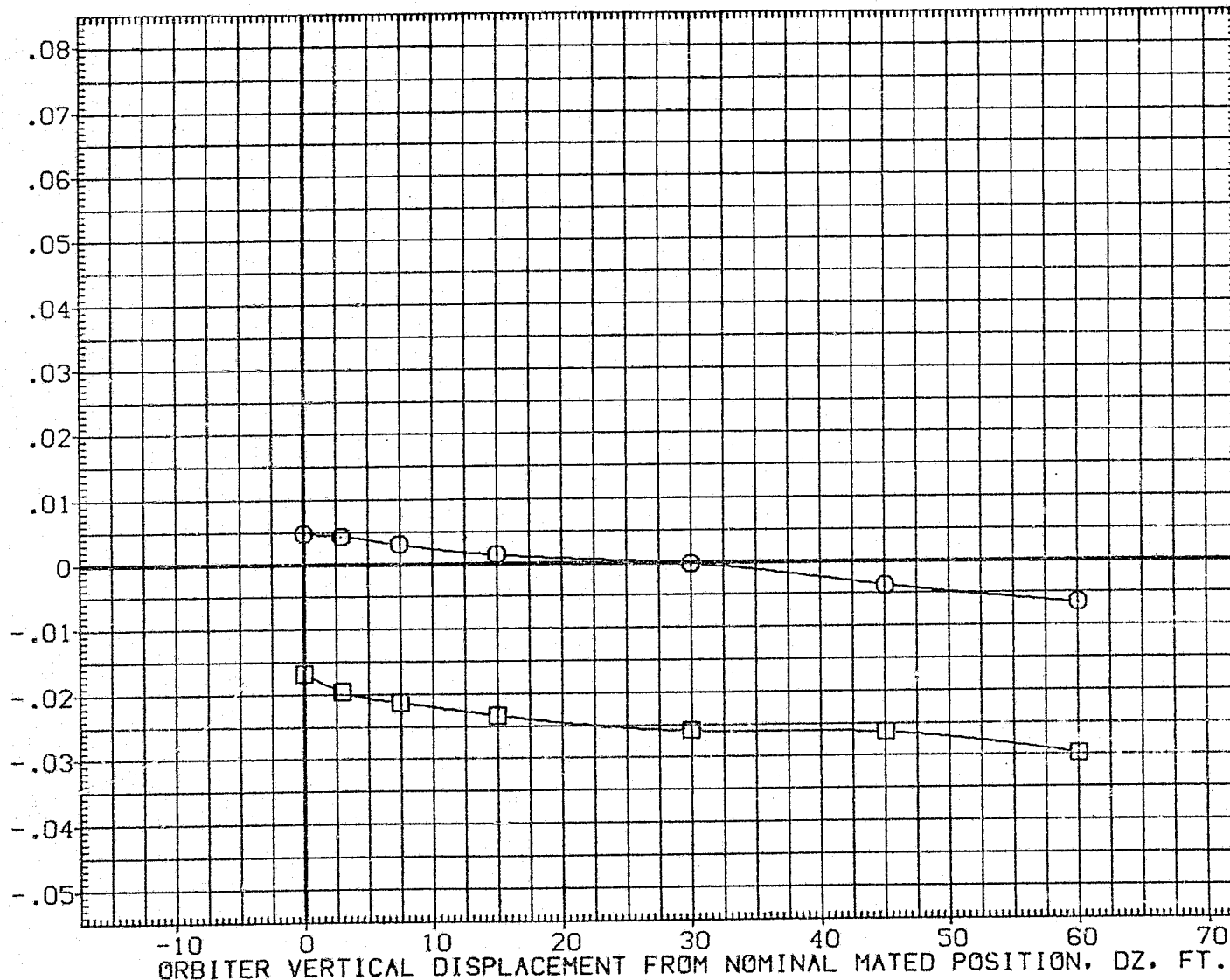


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL



ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

.000

10.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

5.000

10.000

8.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

CL

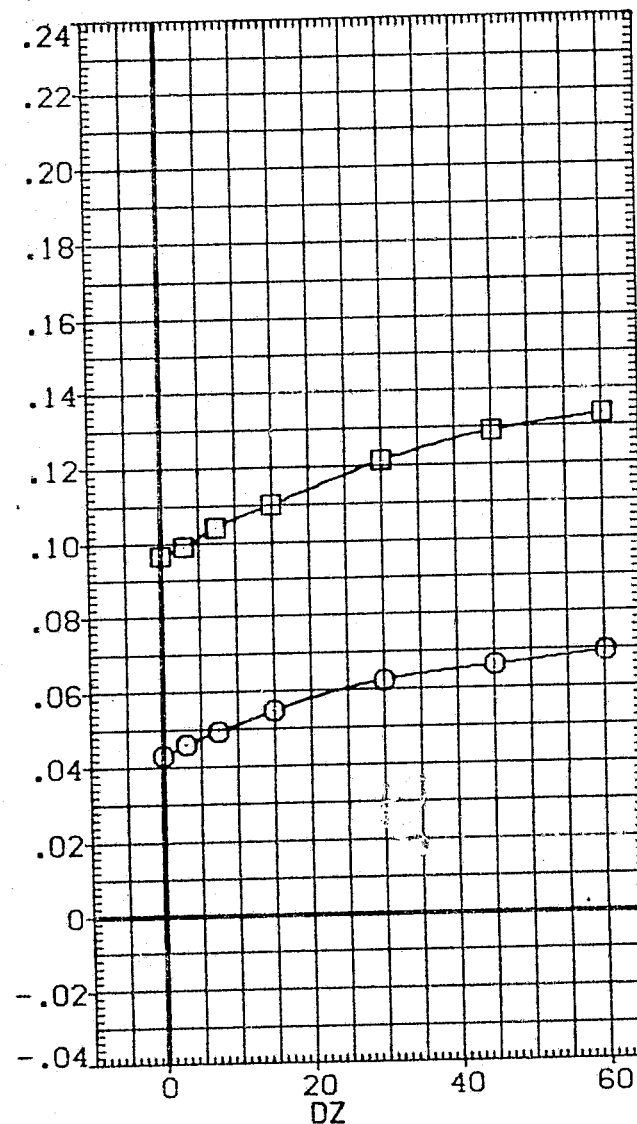
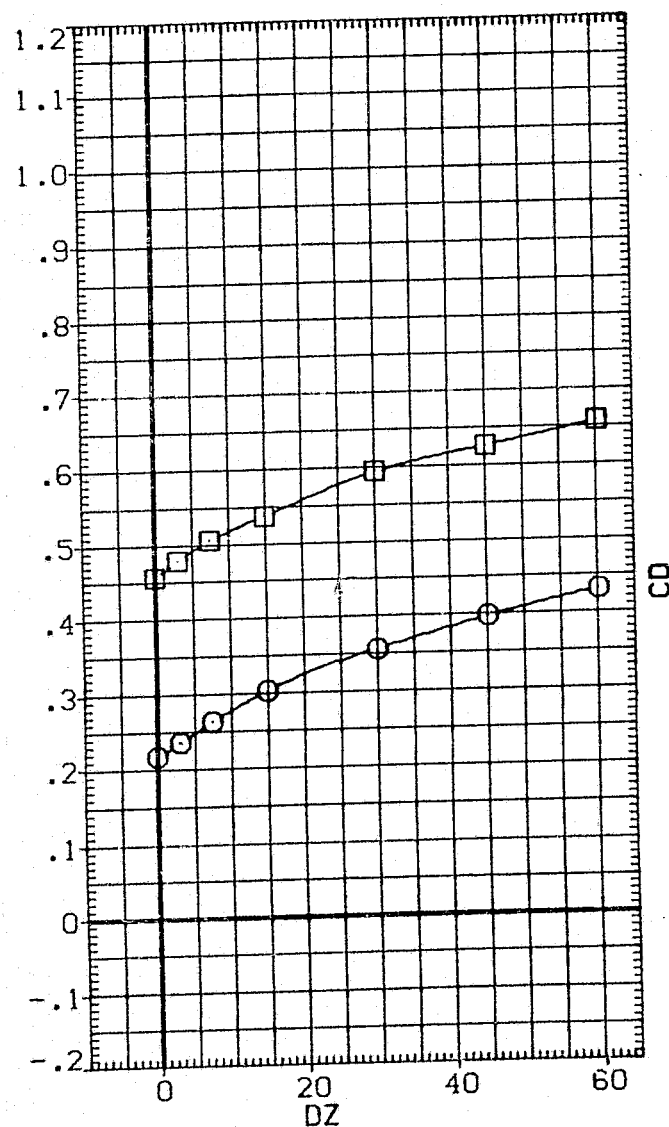


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN075)

SYMBOL ○ □	ALPHA0	10.000	ELV-IB	.000	ELV-OB	3.000
		14.000	ELEVON	5.000	MACH	.600
			BETA0	.000	BETAC	5.000
			PHI	.000	DY	10.000
			DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

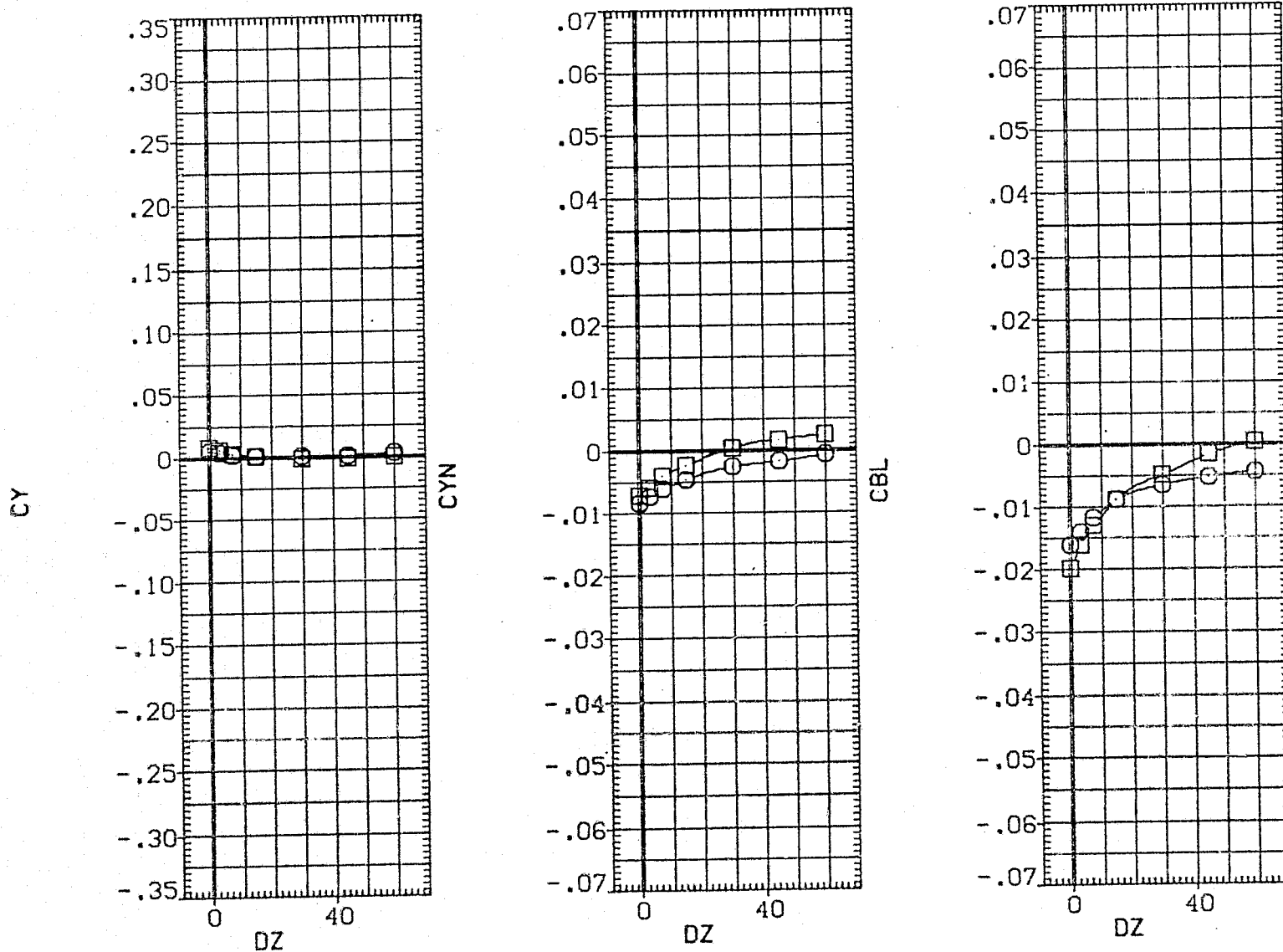


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	14.000	ALPHAC	8.000	BETAC	5.000
○			ELV-1B	.000	ELV-0B	3.000
□			ELEVON	5.000	MACH	.600
			PHI	.000	DX	10.000
			DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

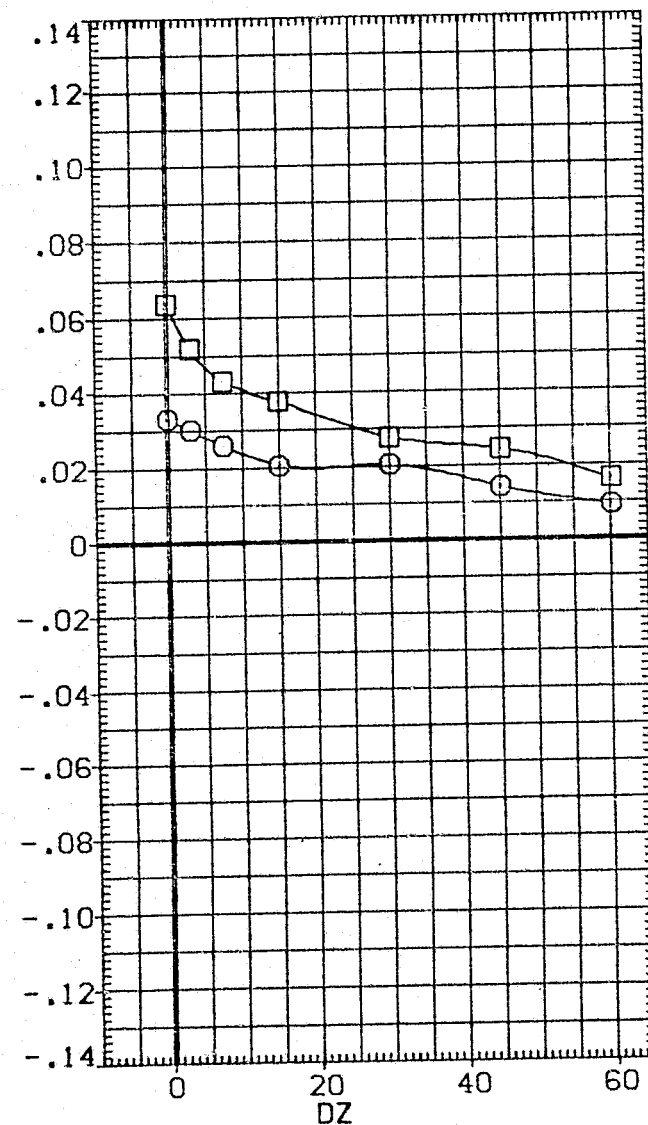
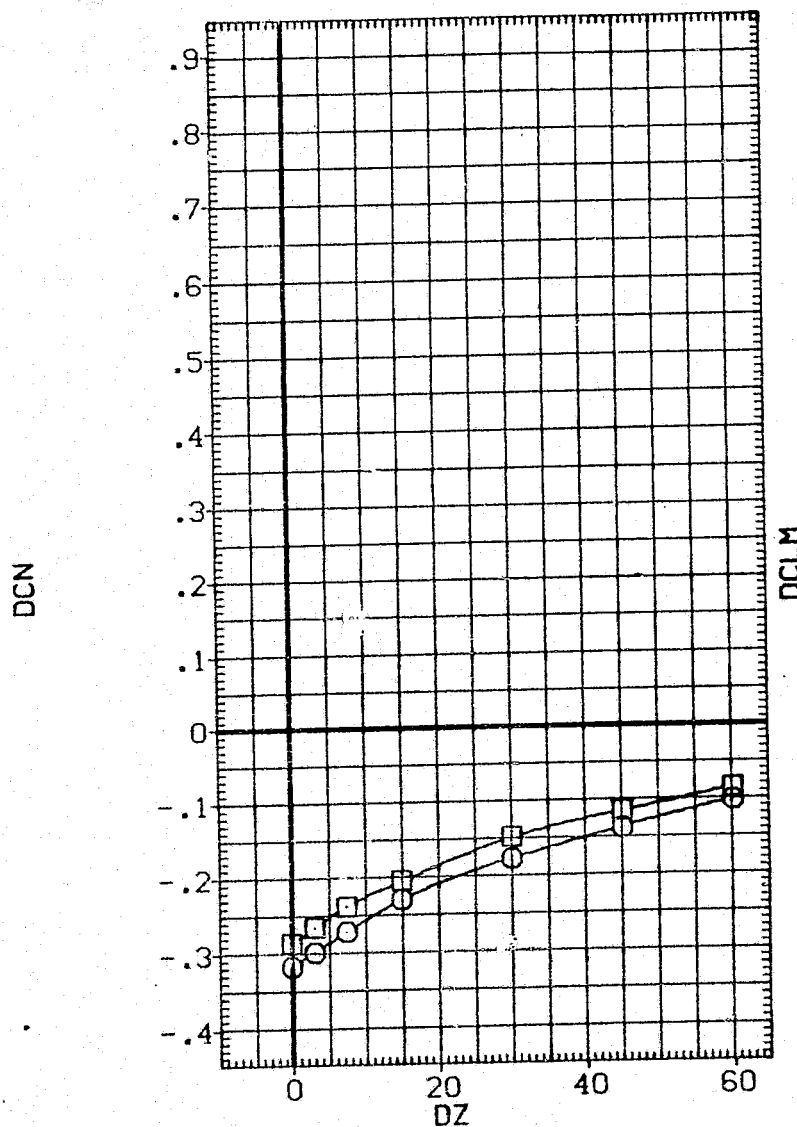


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (075 - 010)(VGN075)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	5.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

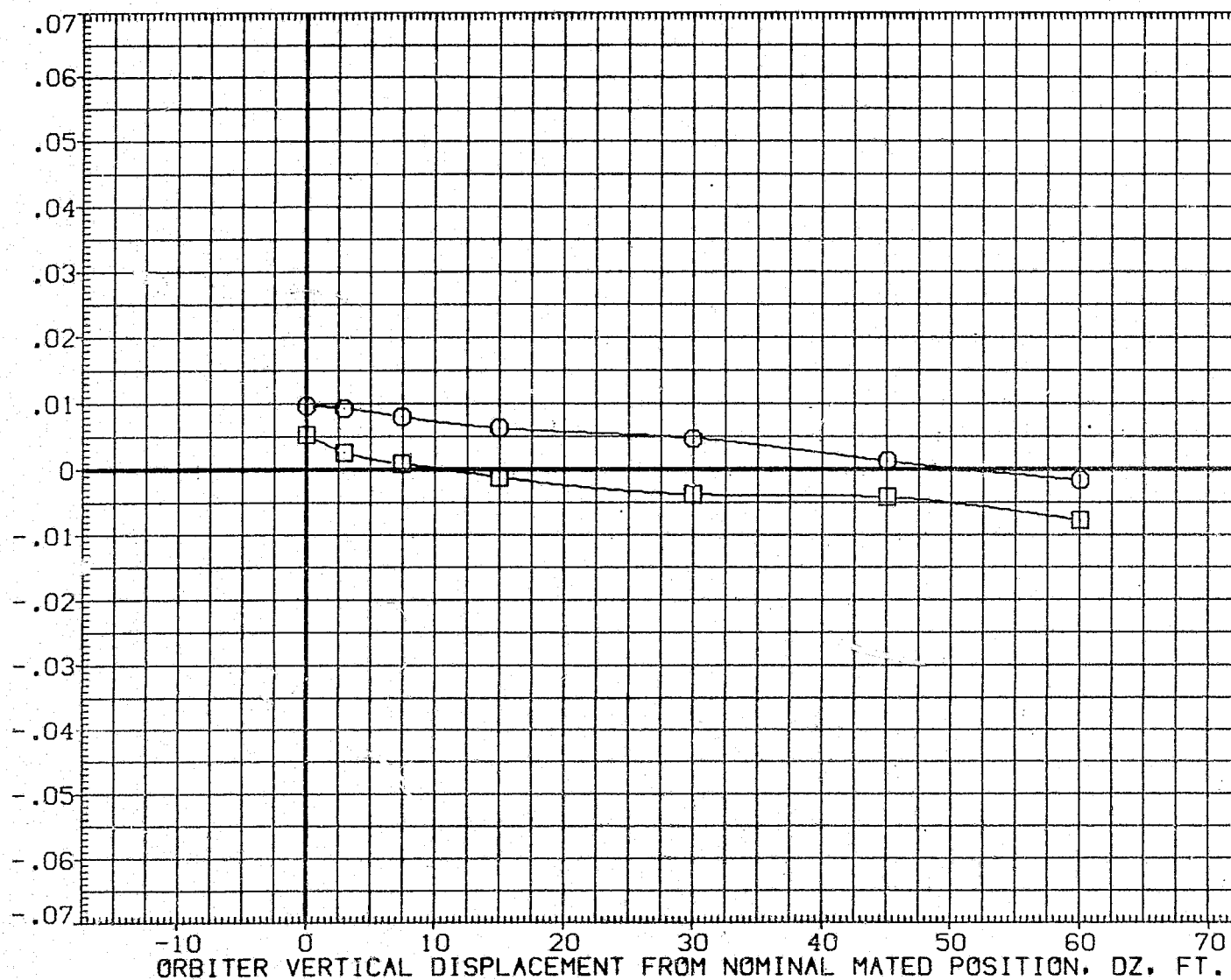


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

10.000

BETAC

ELV-0B

MACH

DX

BETA0

5.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

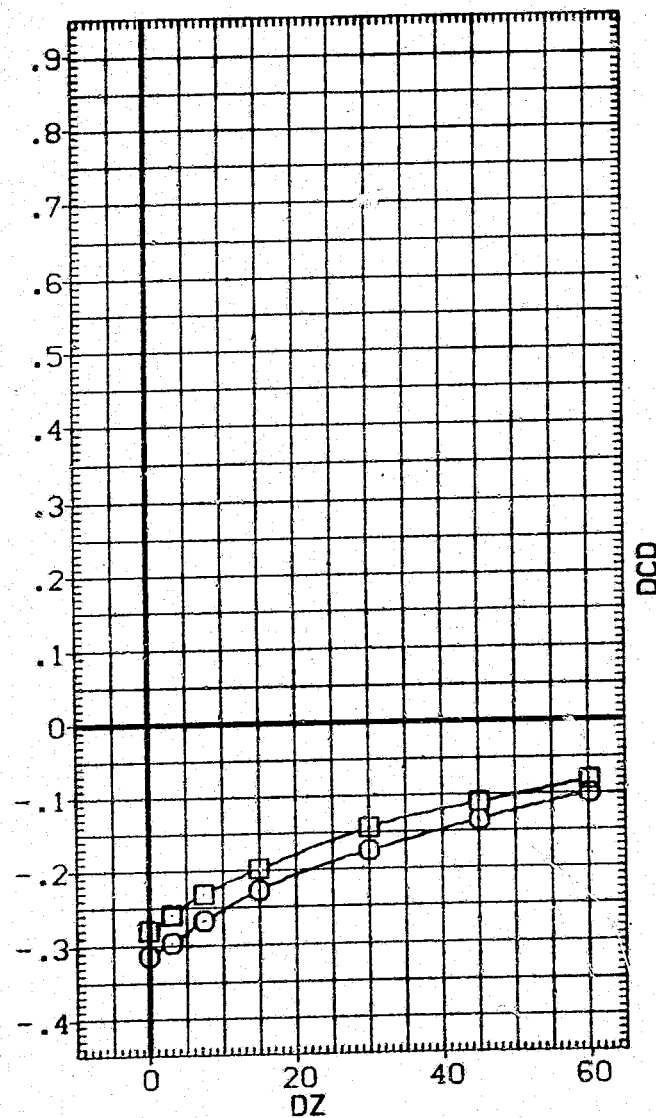
IN.

IN.X0

IN.Y0

IN.Z0

DCL



DCD

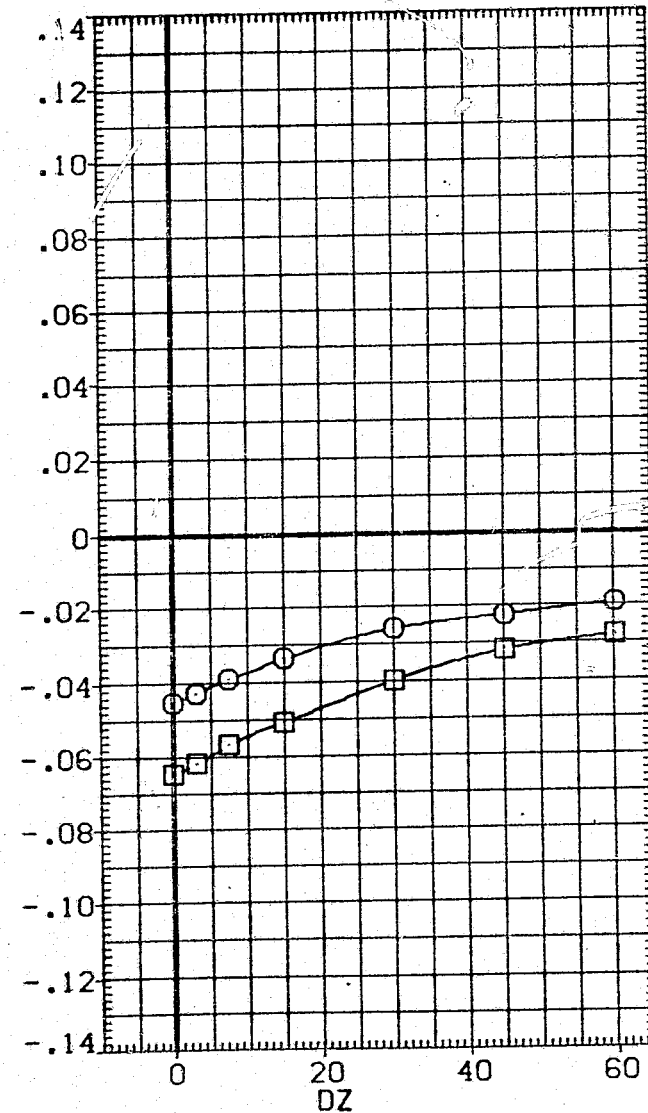


FIG 26 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN096)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	
○	10.000	ELEVON	.000	3.000	
□	14.000	BETA0	5.000	MACH	.600
		PHI	-5.000	BETAC	-5.000
		DX	7.500	DY	10.000
			.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

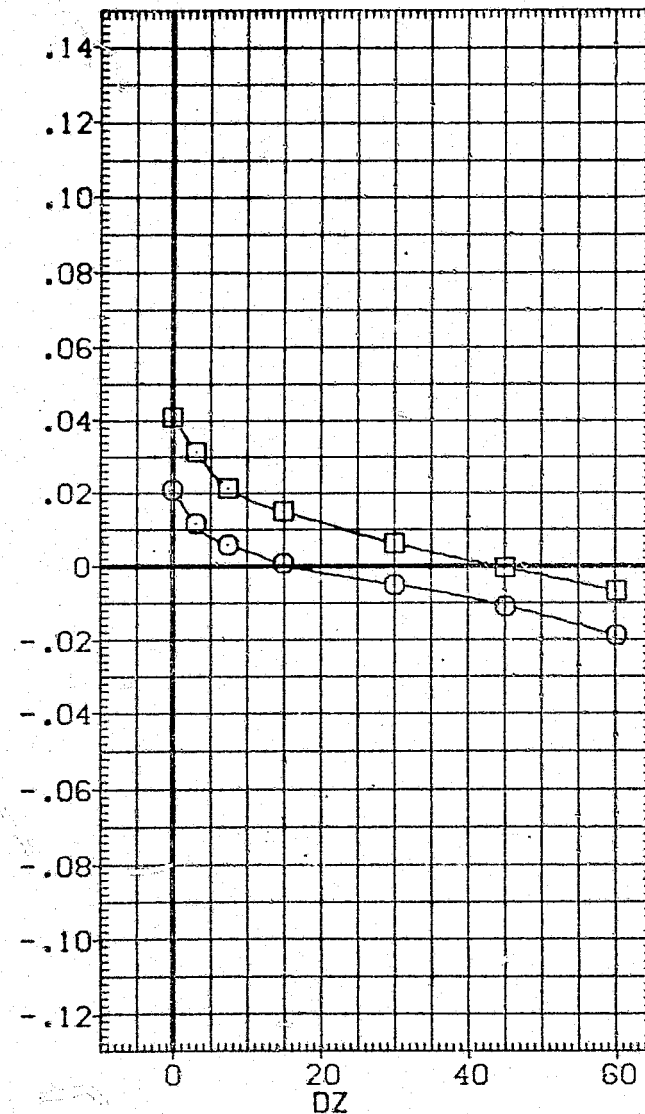
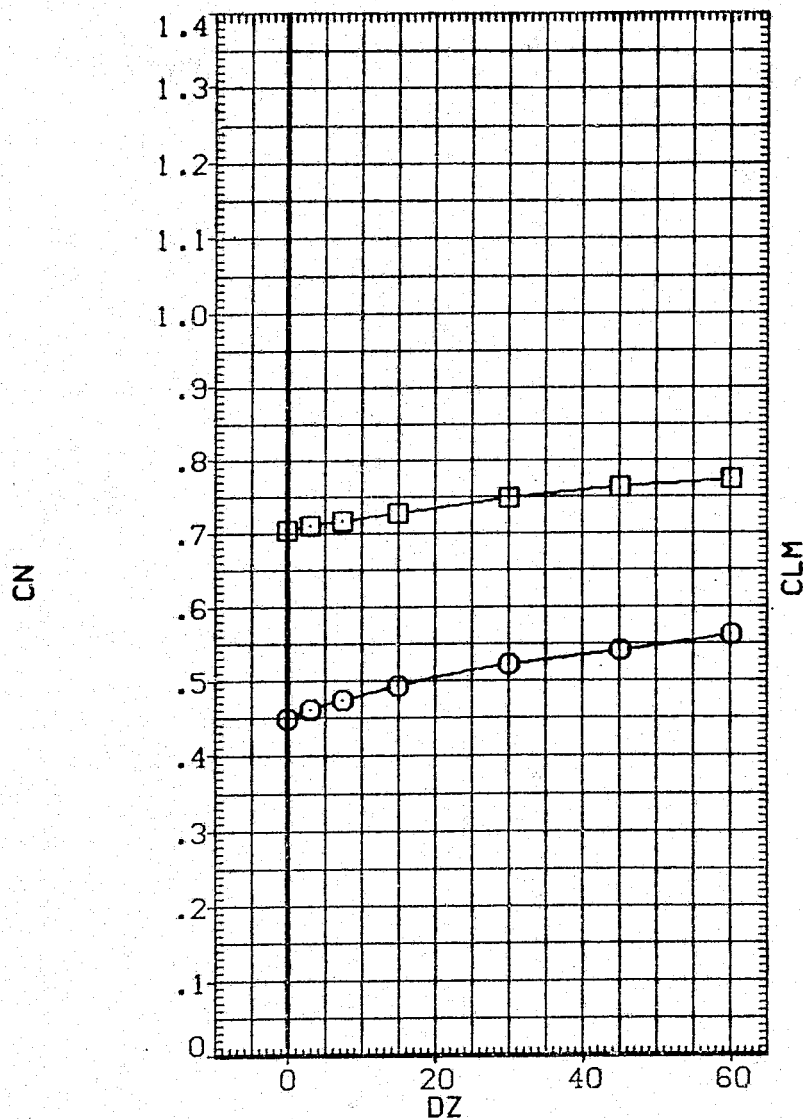


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-IB

ELEVON

BETA0

PHI

OX

PARAMETRIC VALUES

.000

5.000

-5.000

7.500

.000

ELV-OB

MACH

BETAC

DY

ALPHAC

3.000

.600

-5.000

10.000

4.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

AXIAL FORCE COEFFICIENT, CA

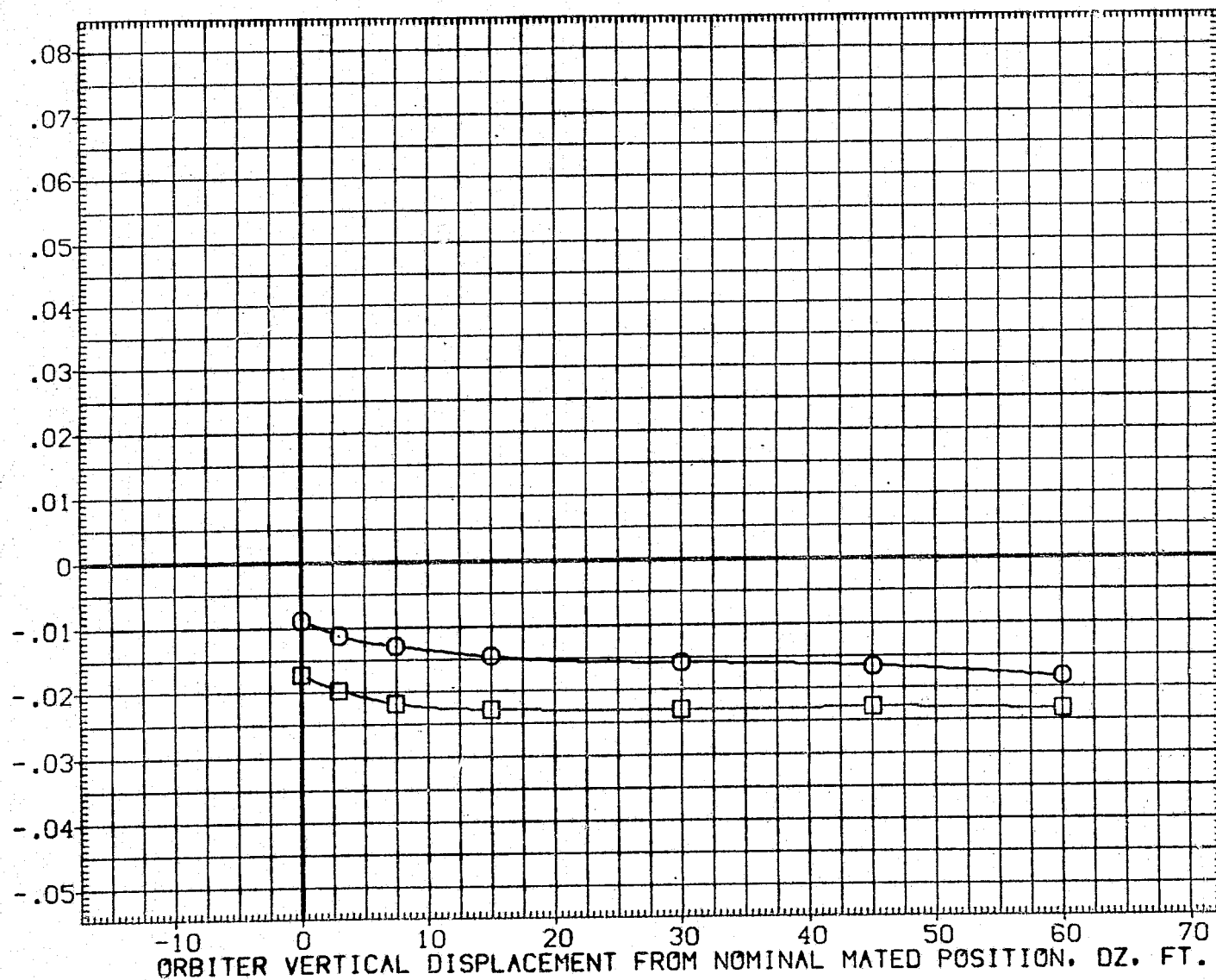


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN096)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 BETAC -5.000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

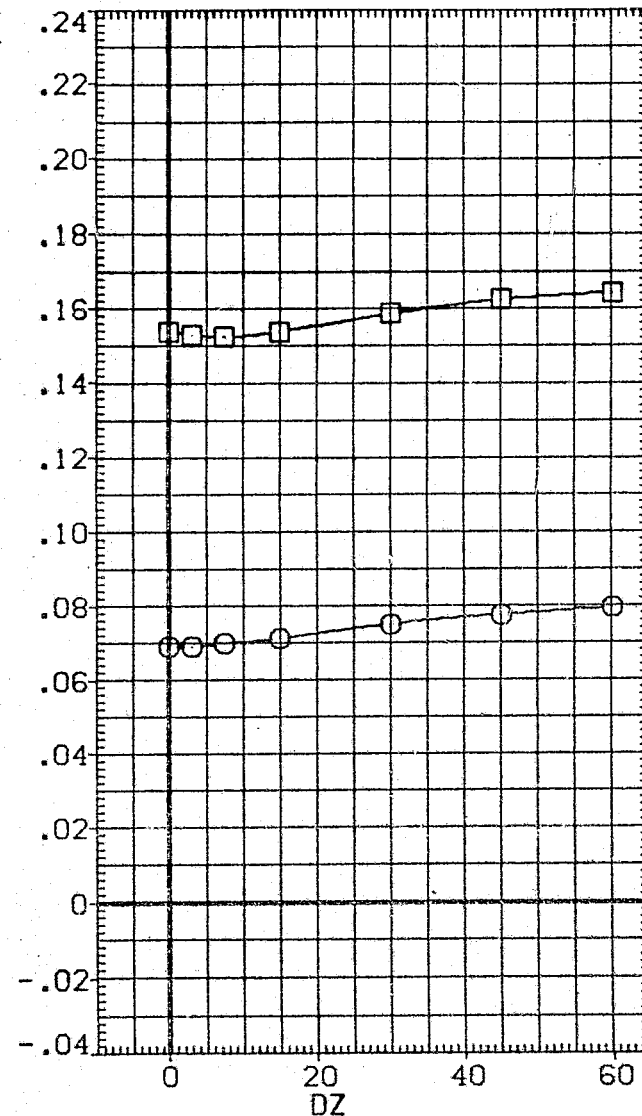
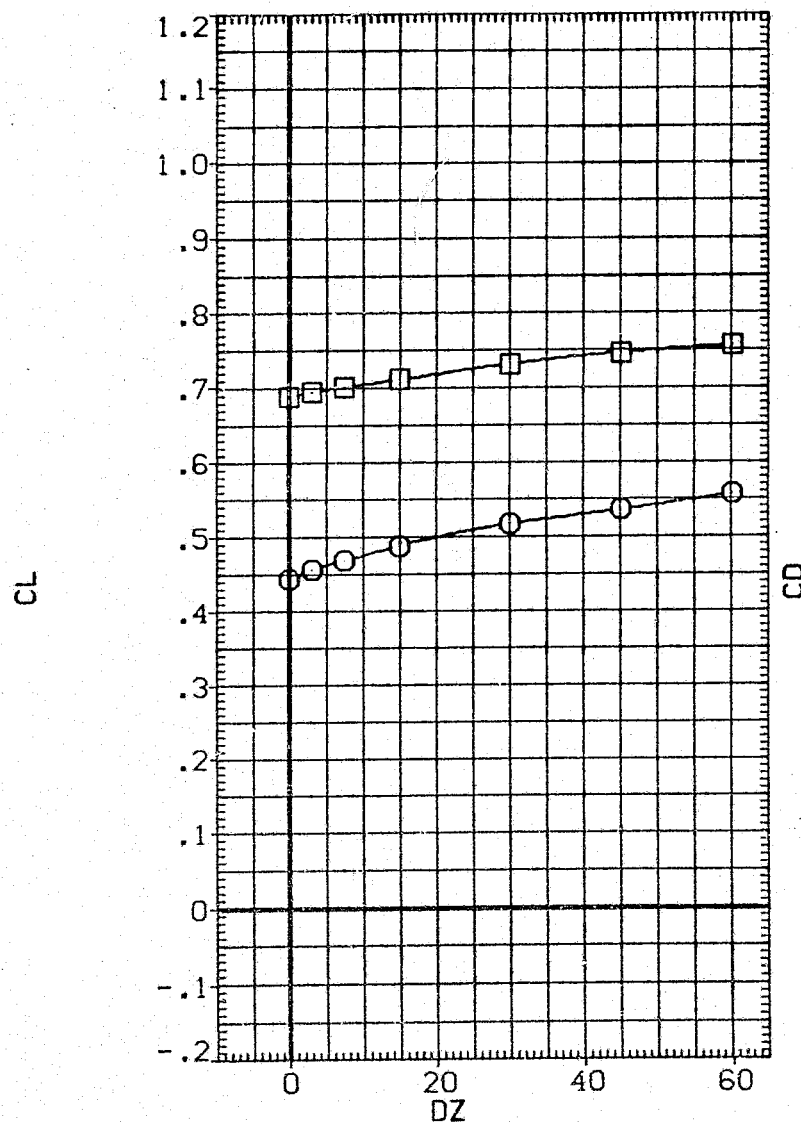


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN096)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	ELEVON	.000	MACH
□	14.000	BETA0	5.000	BETAC
		PHI	-5.000	DY
		DX	7.500	ALPHAC
			.000	4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

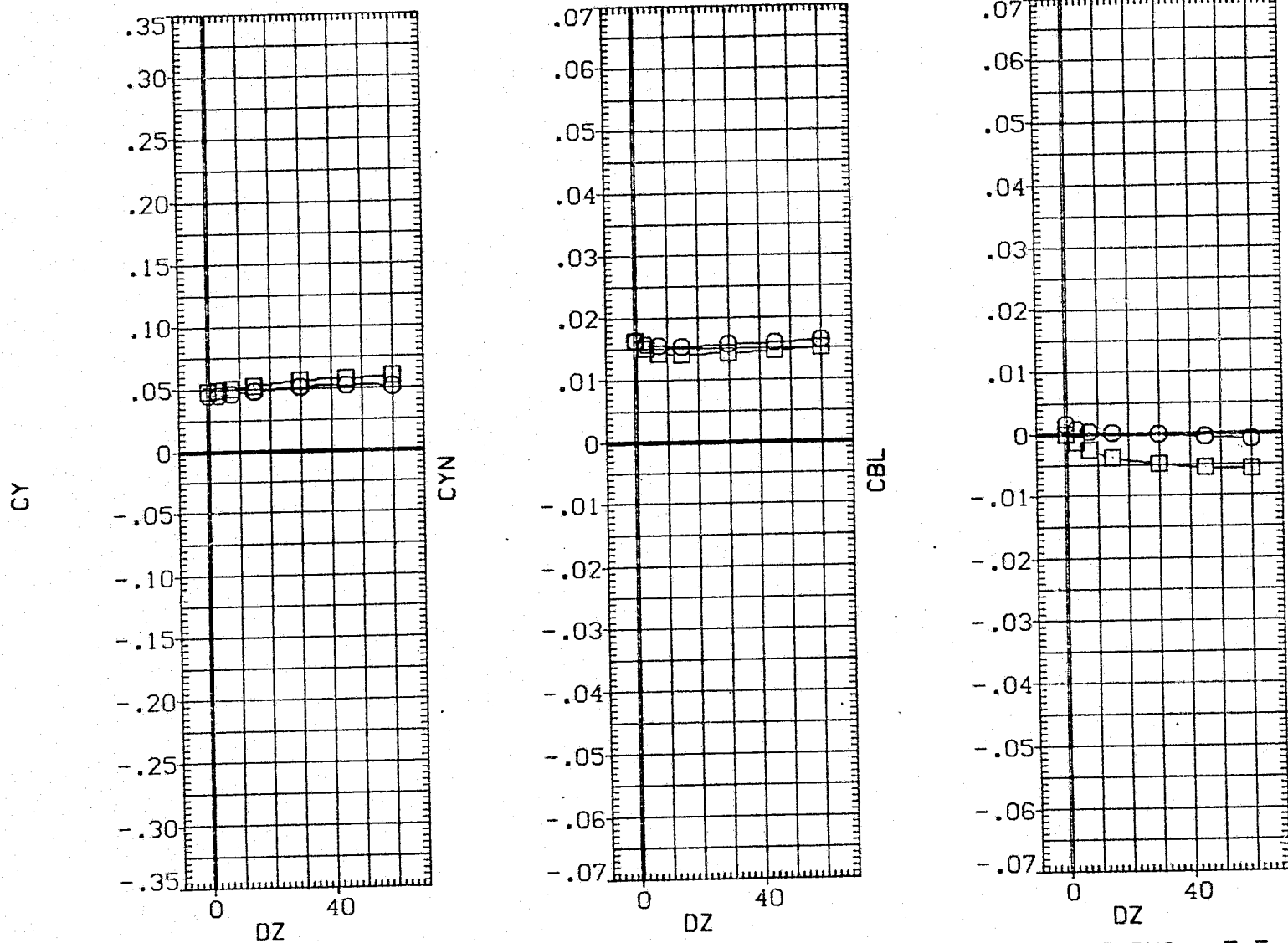


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (096 - 007)(VGN096)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY 10.000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

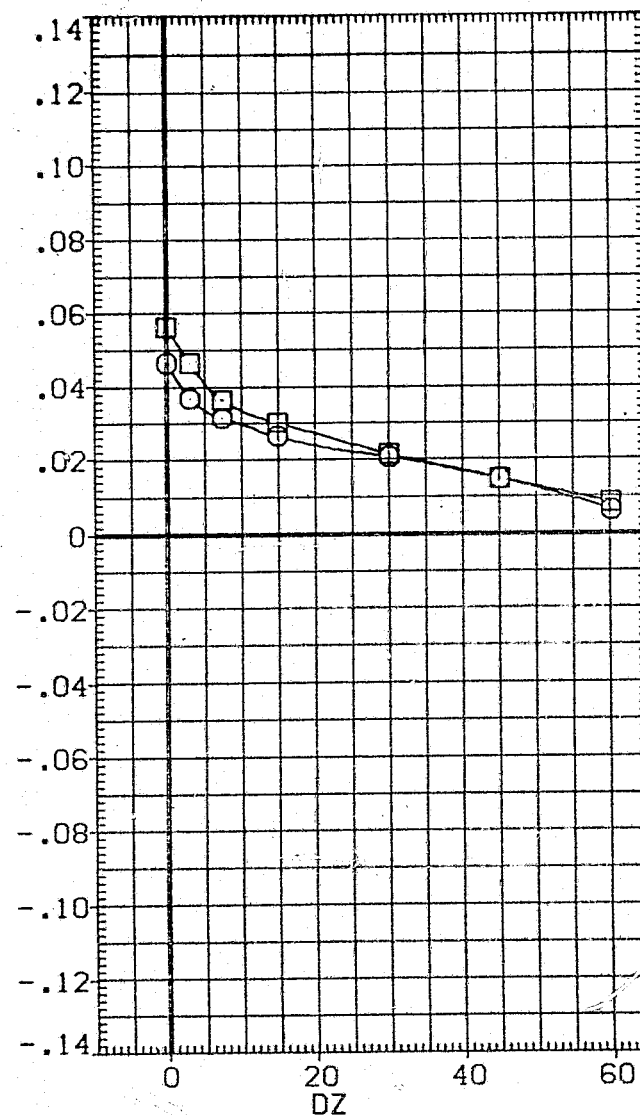
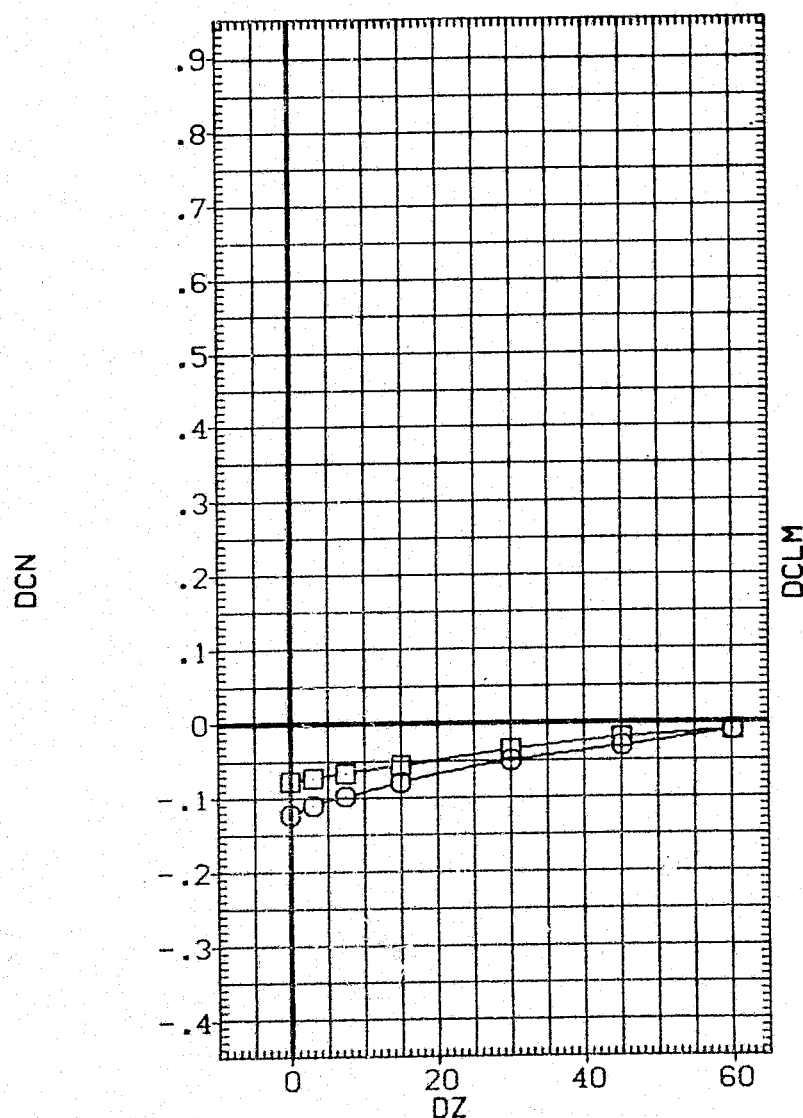


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

7.500

10.000

BETAC

ELV-0B

MACH

DX

BETA0

-5.000

3.000

.600

.000

-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
9REF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

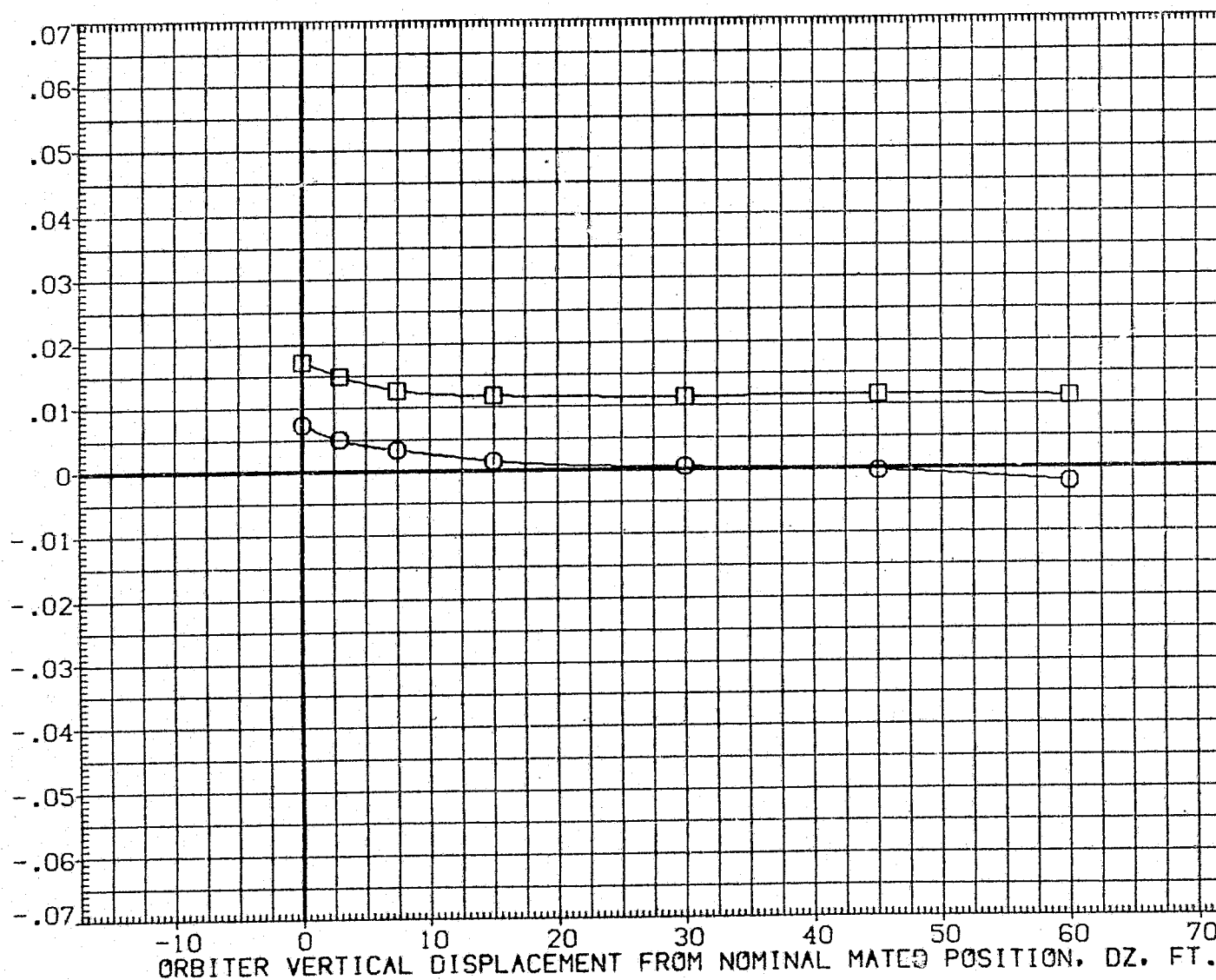


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (096 - 007) (VGN096)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

7.500

10.000

BETAC

ELV-0B

MACH

DX

BETA0

-5.000

3.000

.600

.000

-5.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

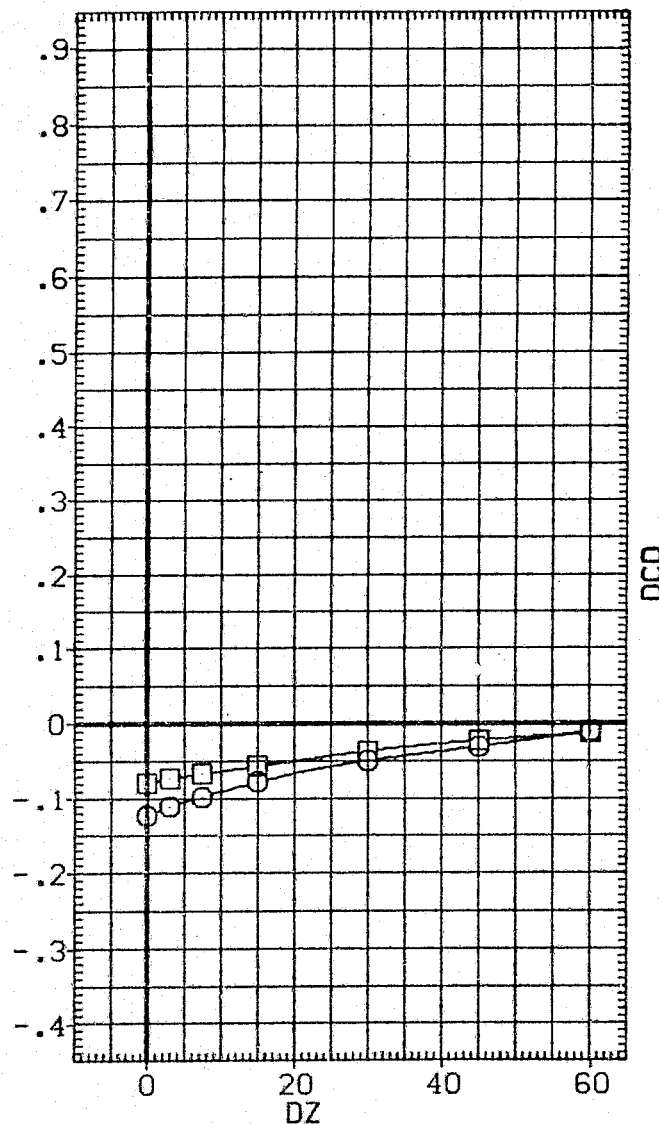
375.0000

IN.Z0

SCALE

.0300

DCL



DCD

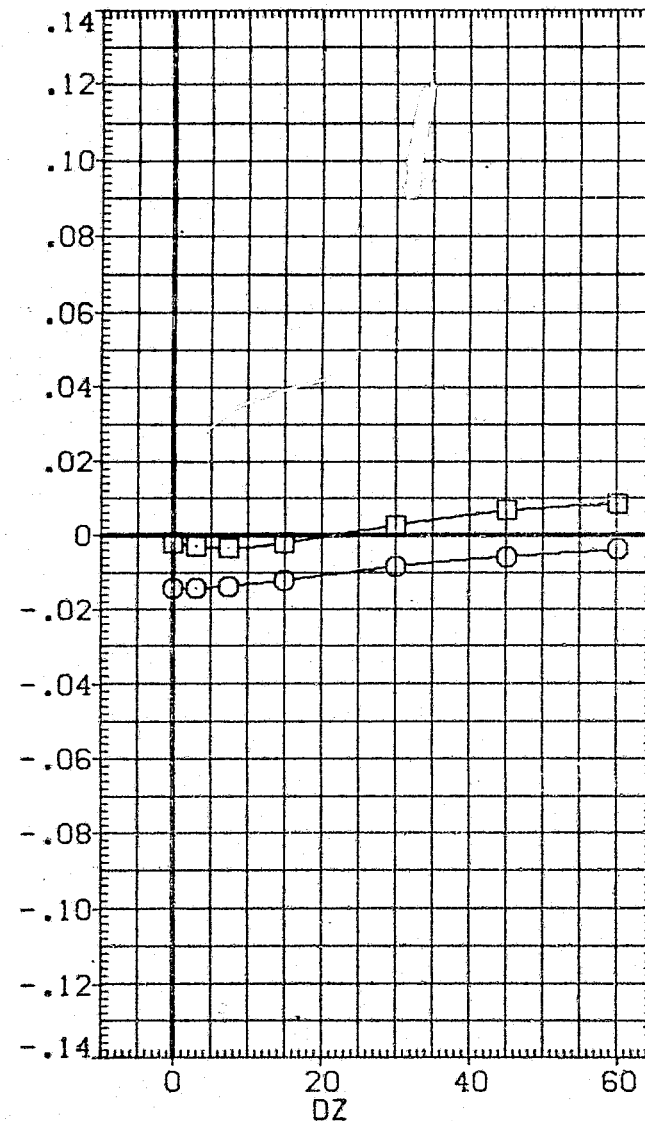


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		PHI	7.500	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

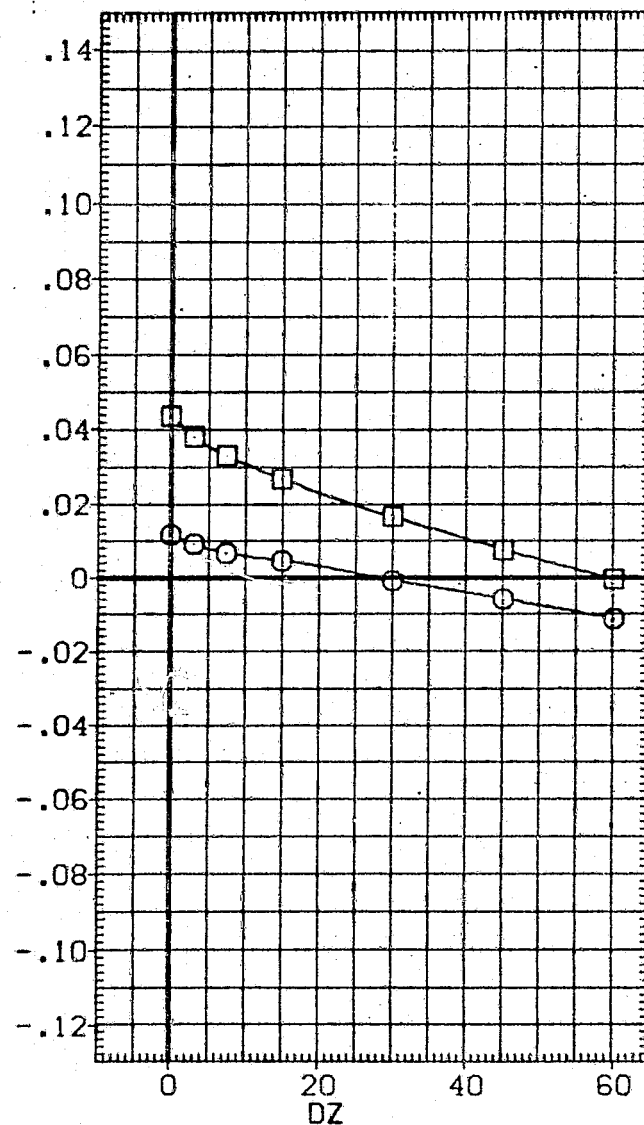
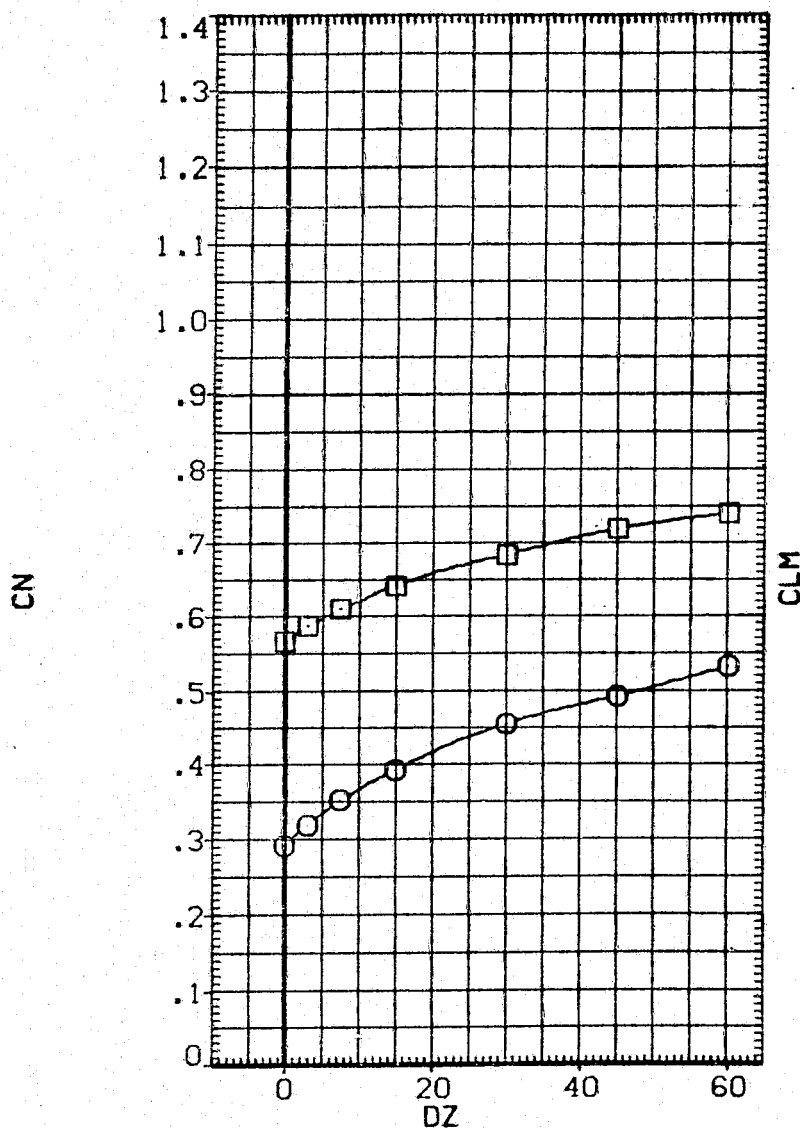


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN097)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI 7.500 BETA0 -5.000
		BETAC -5.000 DY 10.000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

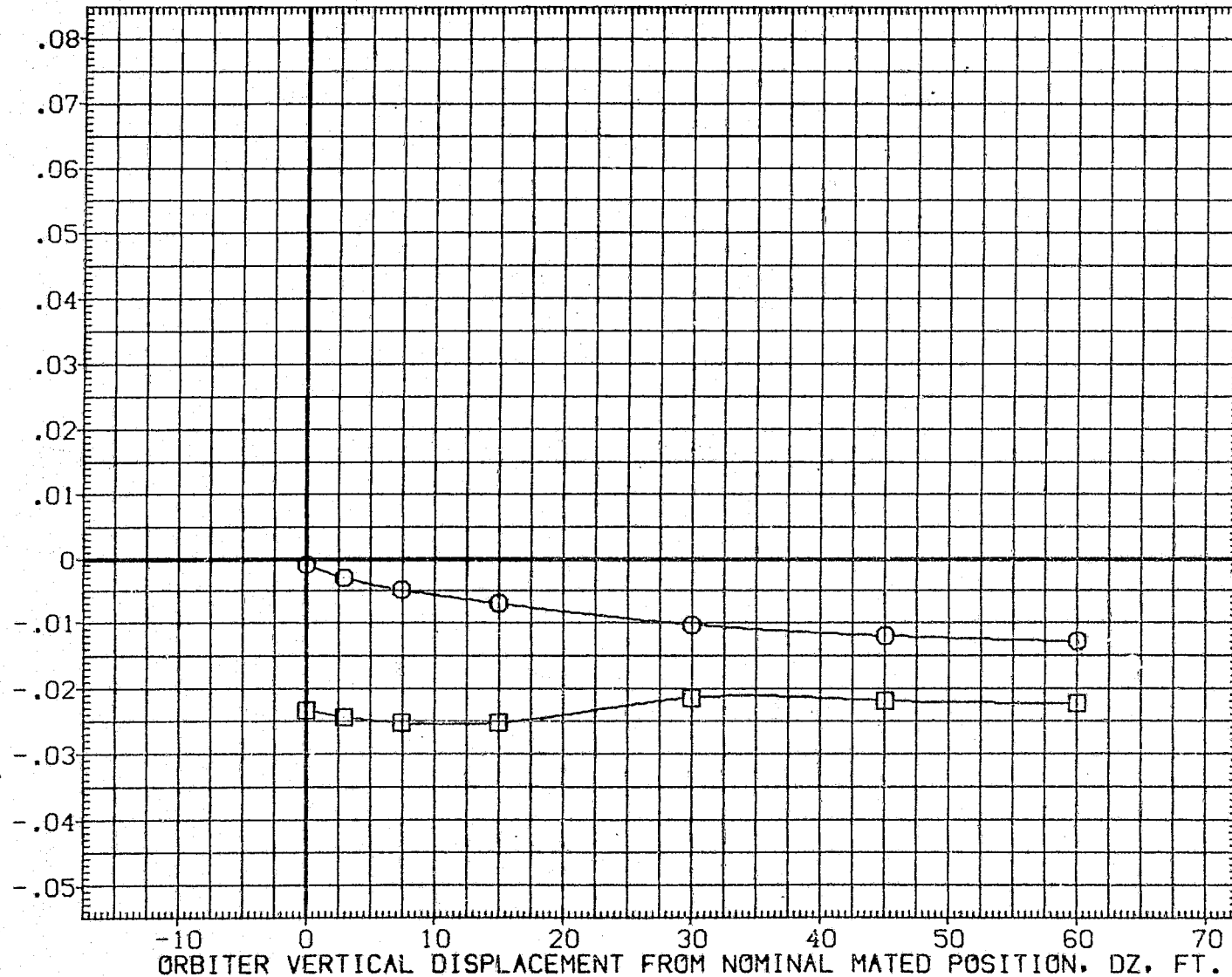


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		PHI 7.500 BETA0 -5.000
		BETAC -5.000 DY 10.000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

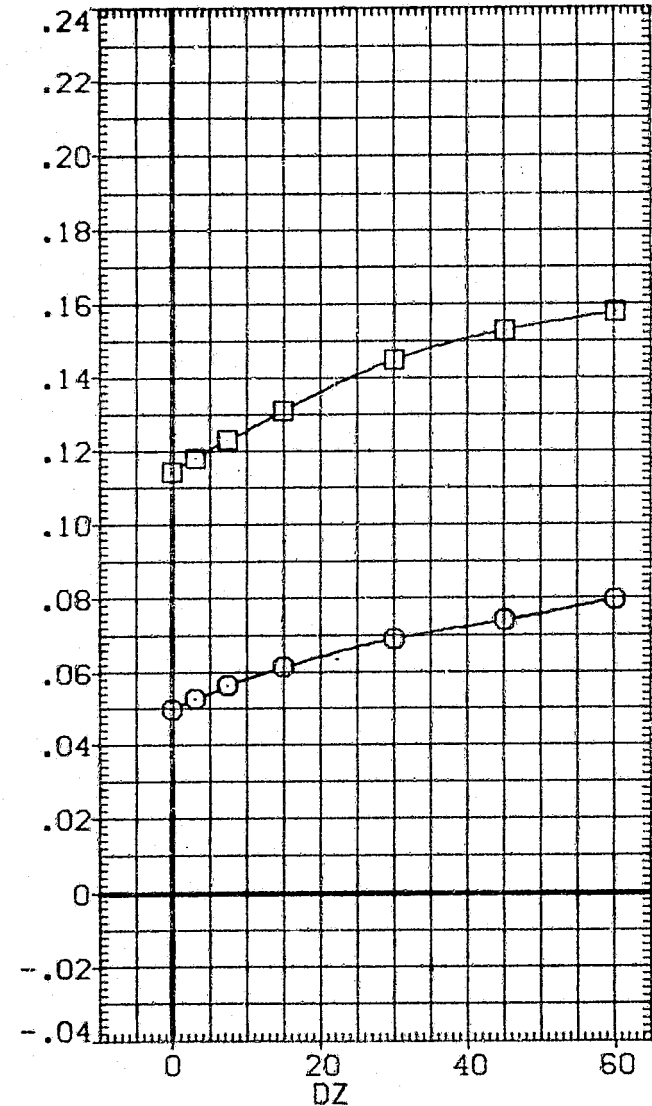
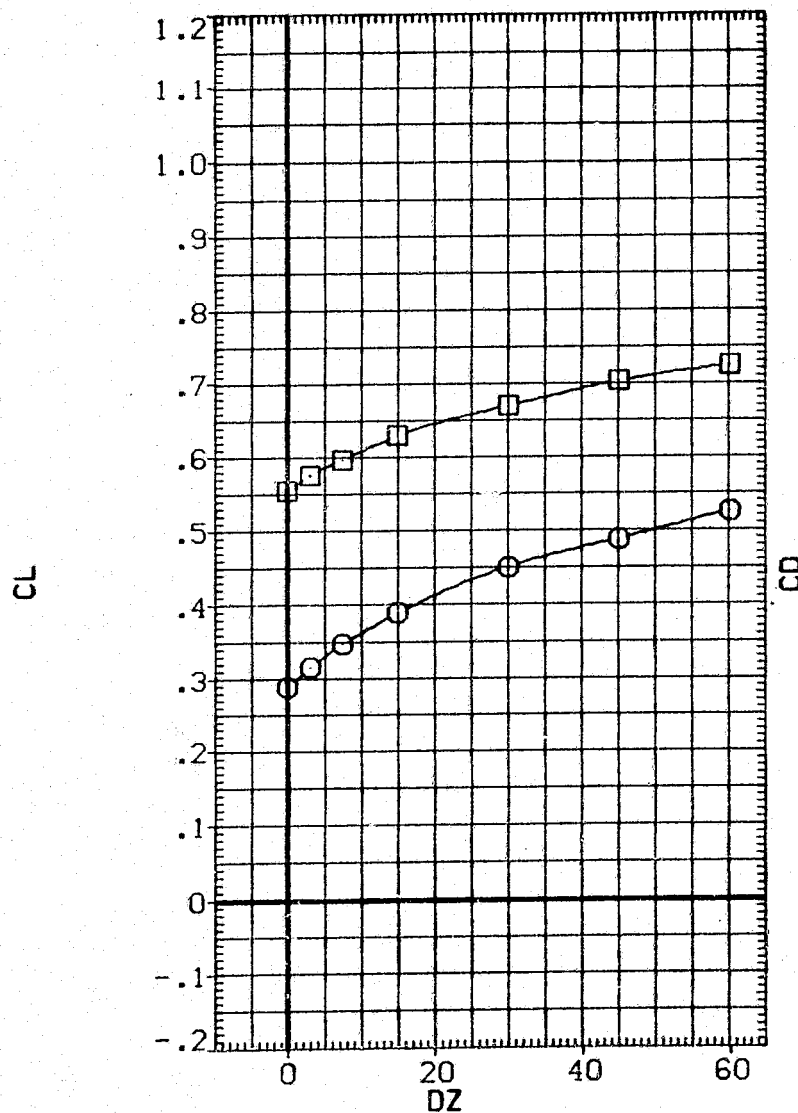


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN097)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.800
		PHI	7.500	BETA0	-5.000
		BETAC	-5.000	DY	10.000
		OX	.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

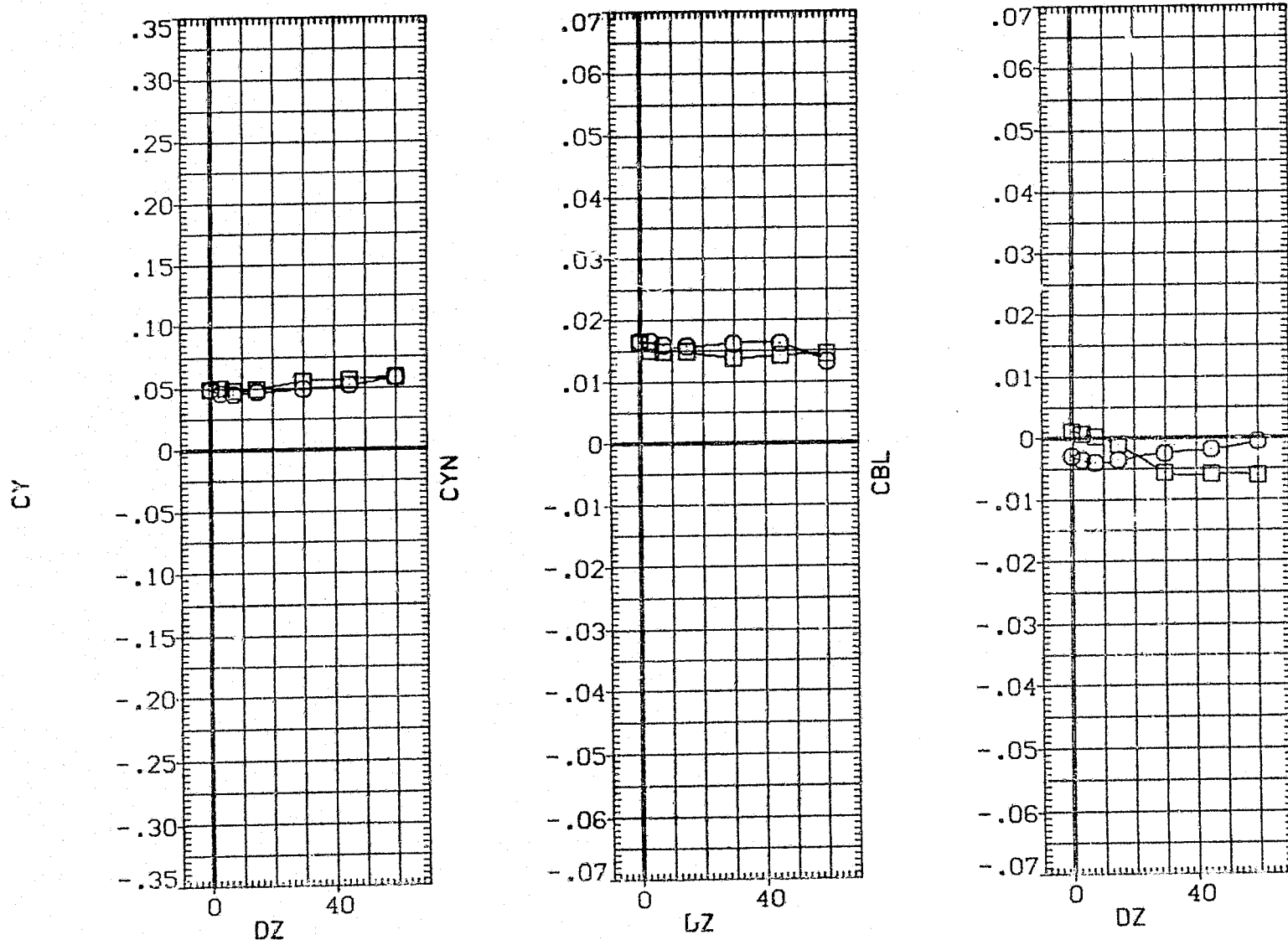


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

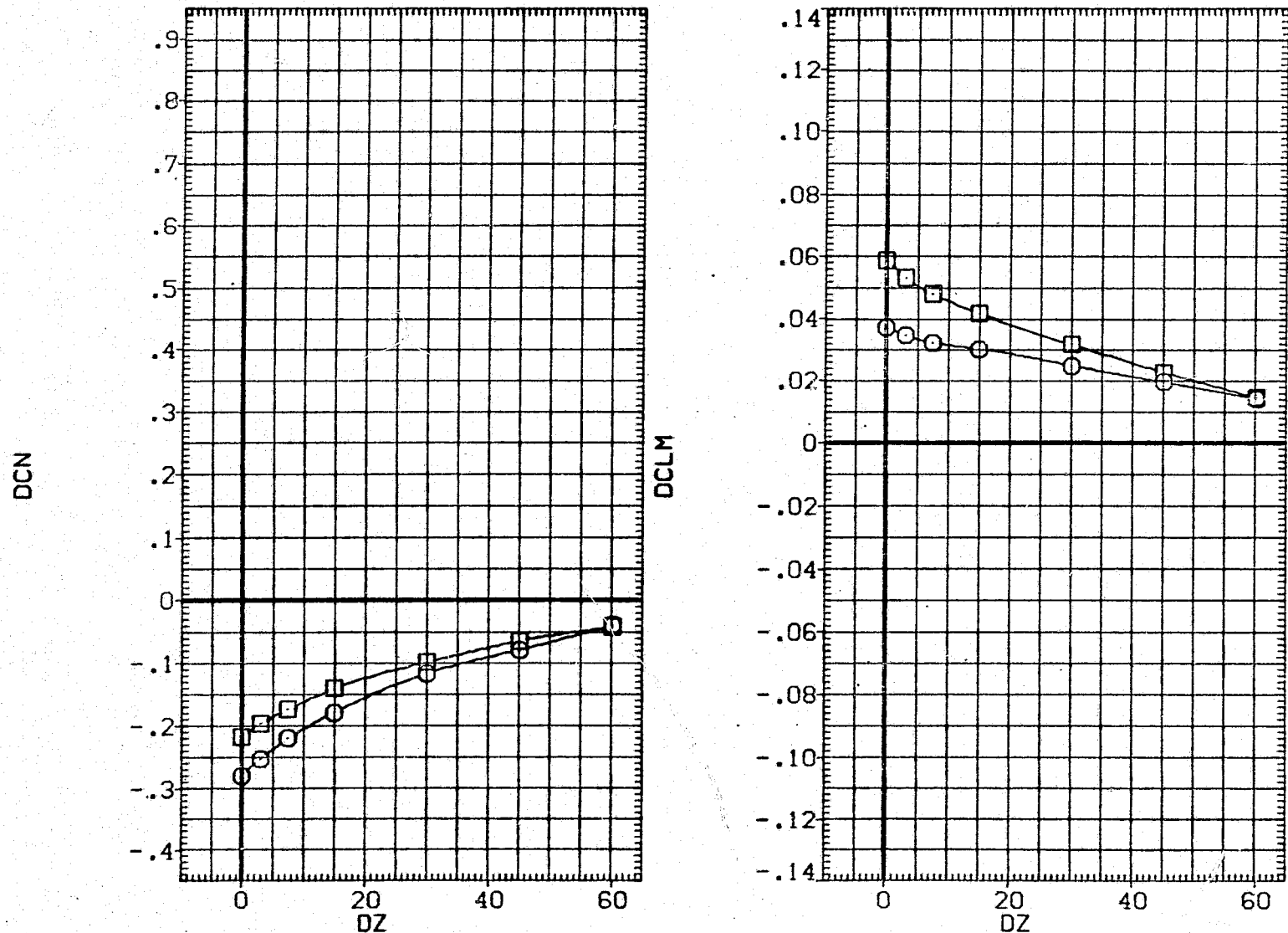


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (097 - 007)(VGN097)

SYMBOL

○
□

ALPHA0

10.000

ALPHAC

PARAMETRIC VALUES

8.000

BETAC

-5.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.800

PHI

7.500

DX

.000

DY

10.000

BETA0

-5.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

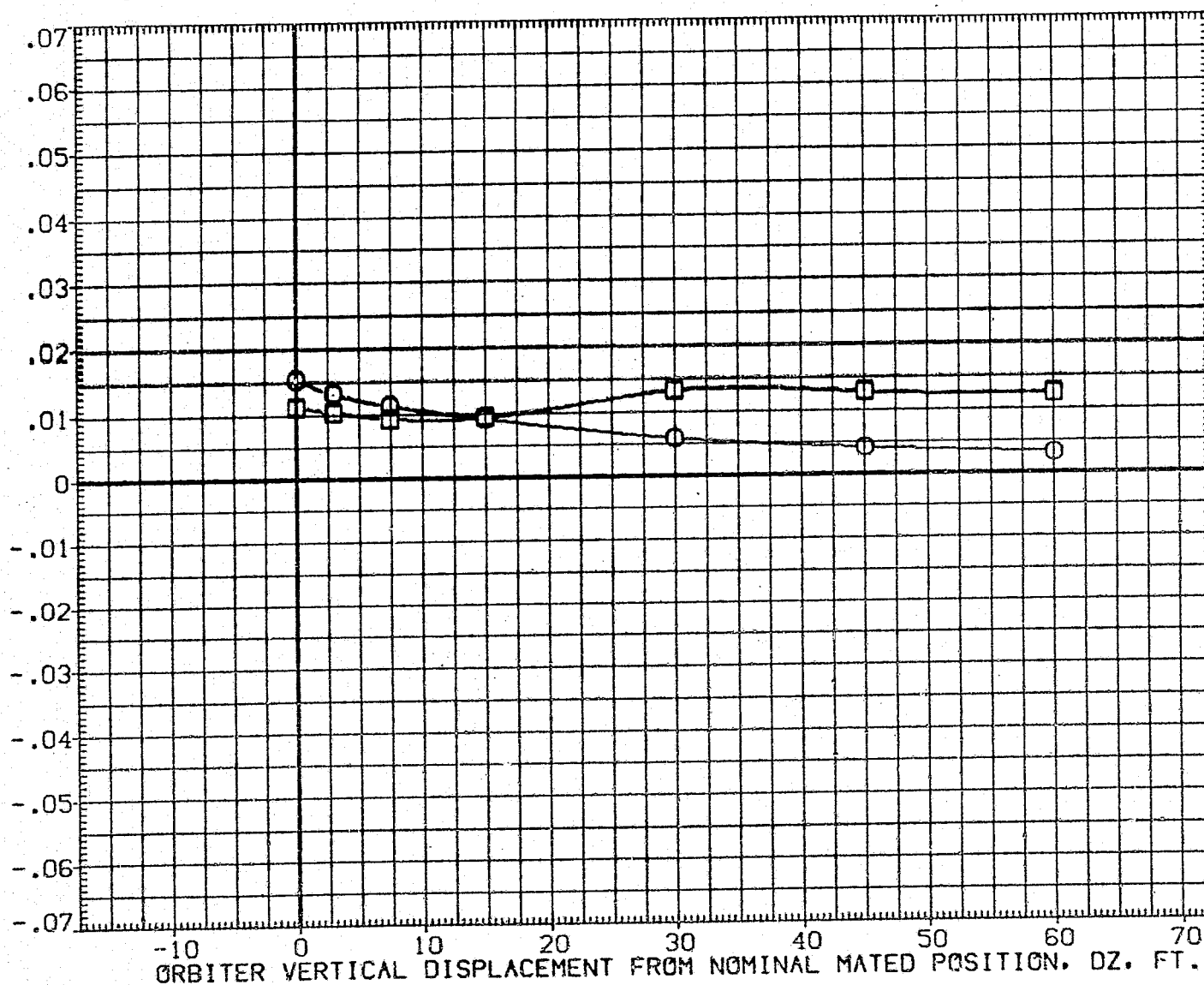


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC
○	10.000	8.000	ELV-1B	-5.000
□	14.000	.000	ELV-0B	3.000
		5.000	MACH	.600
		7.500	DX	.000
		10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

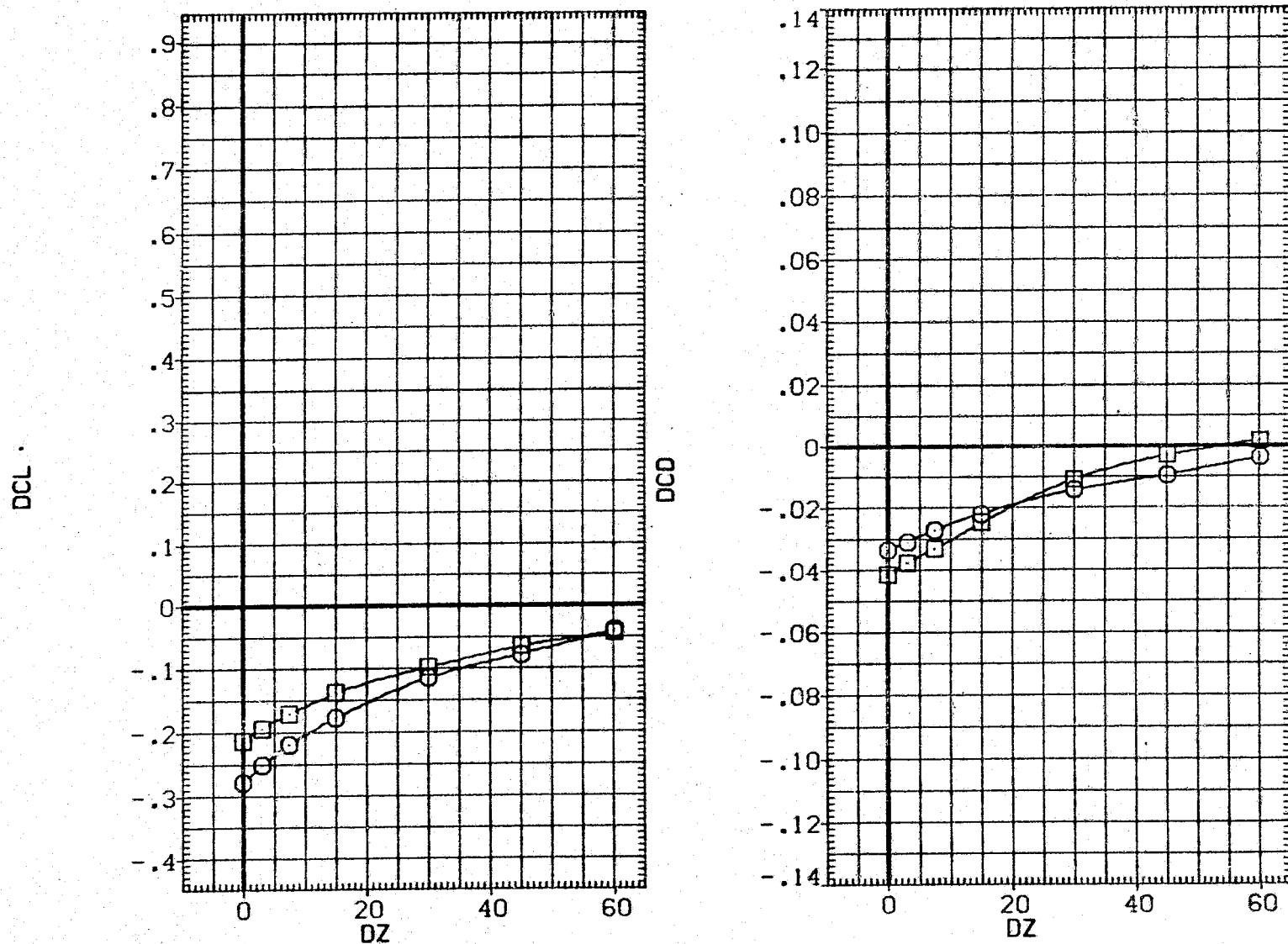


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN098)

SYMBOL



ALPHA0

10.000

14.000

ELV-1B

ELEVON

PHI

BETAC

DX

PARAMETRIC VALUES

.000

5.000

7.500

.000

.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

-5.000

10.000

4.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

CN

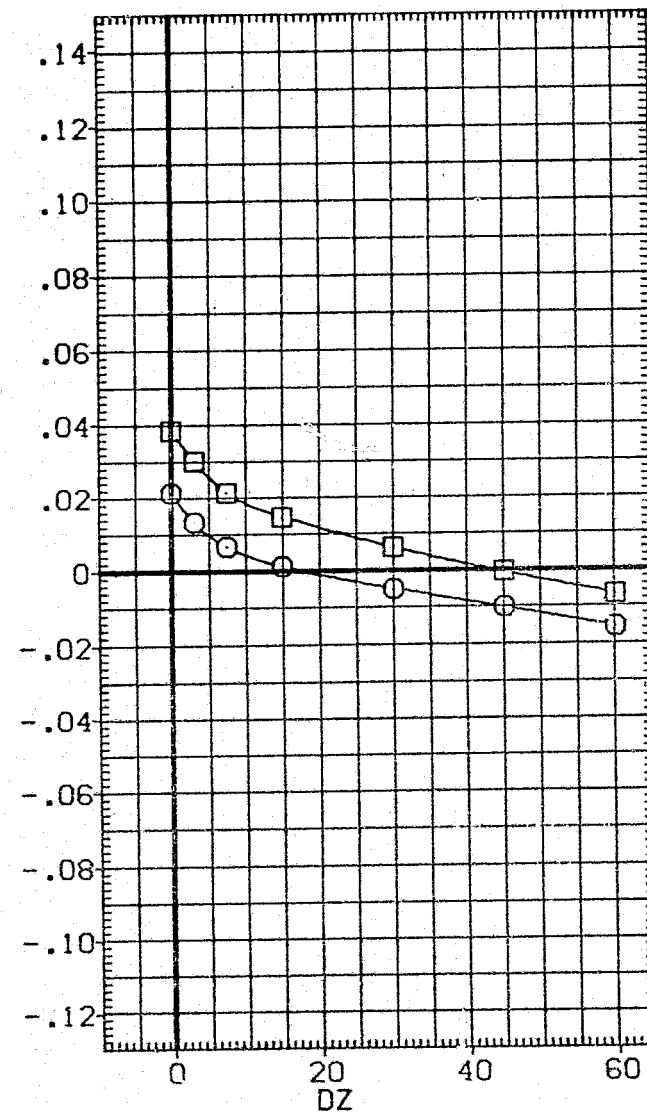
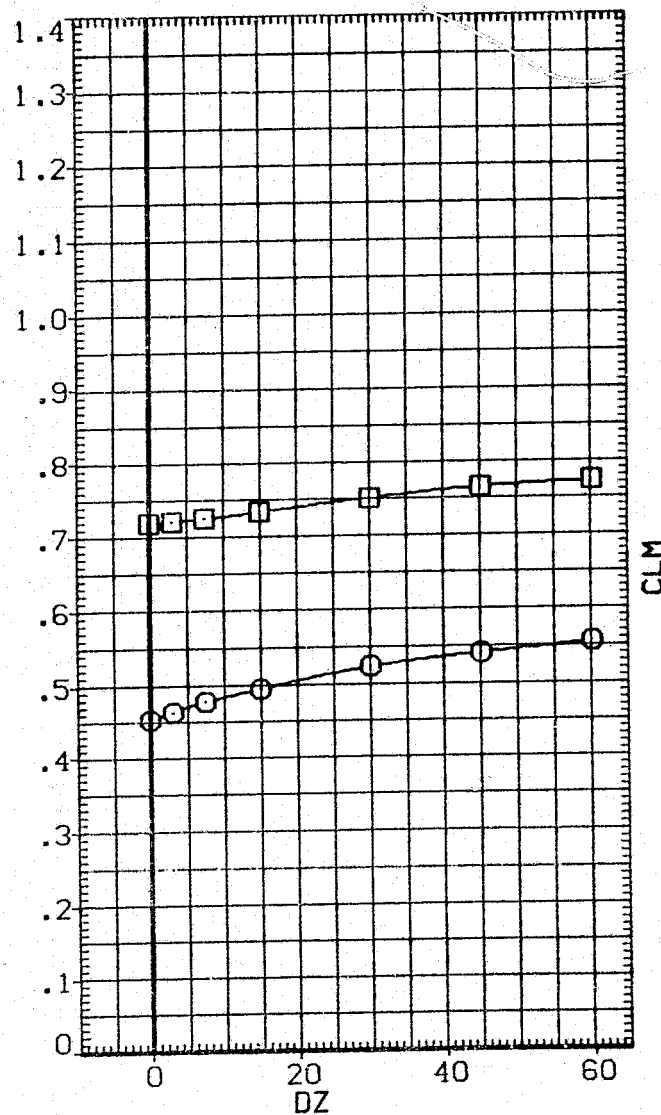


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	7.500	BETA0	-5.000
		BETAC	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

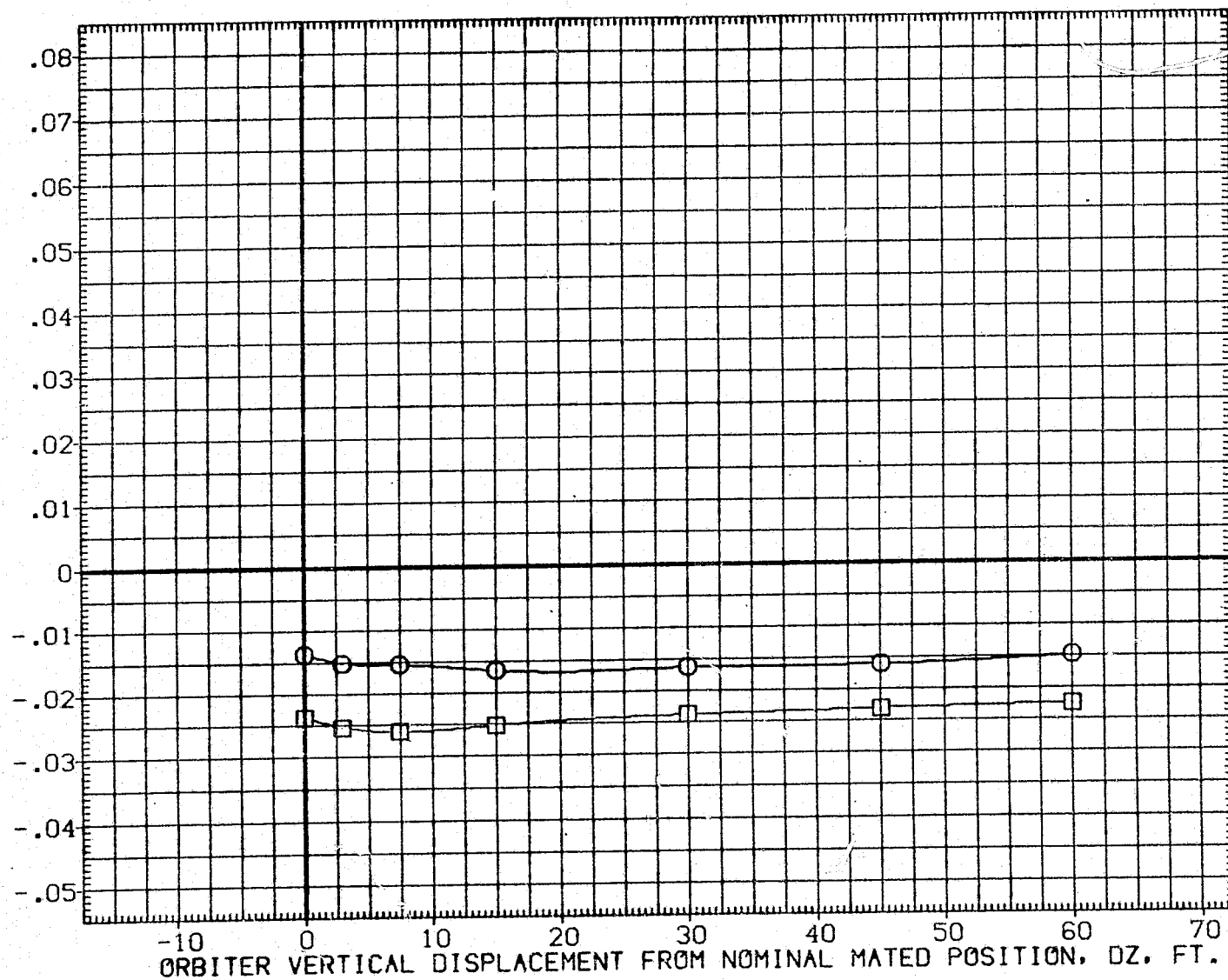


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN098)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	7.500	BETA0	-5.000
		BETAC	.000	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

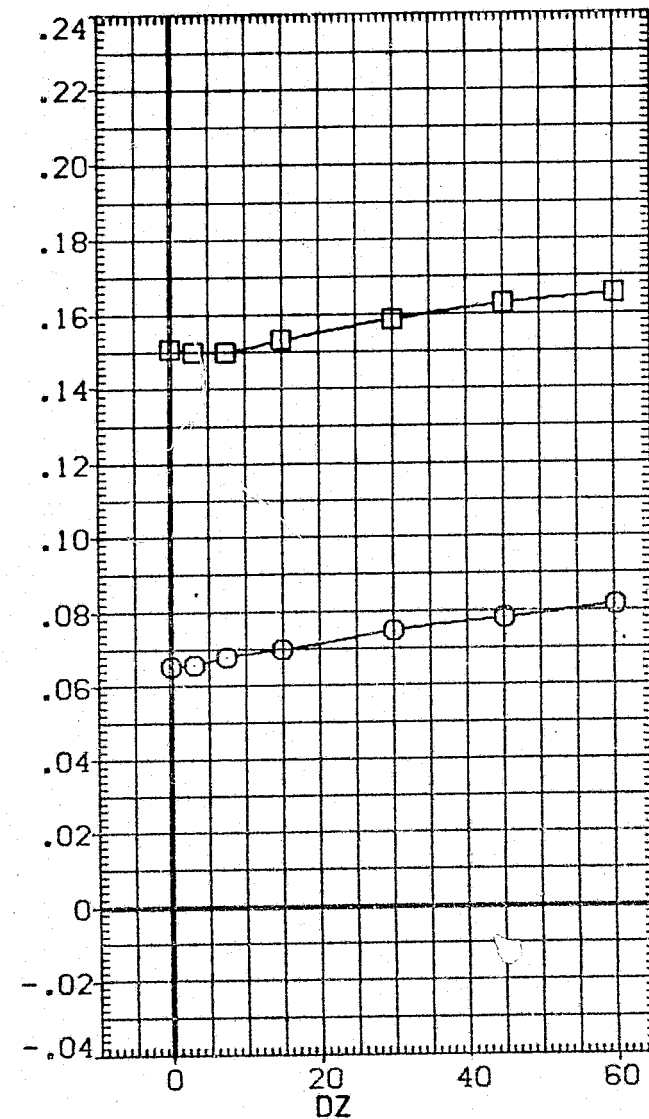
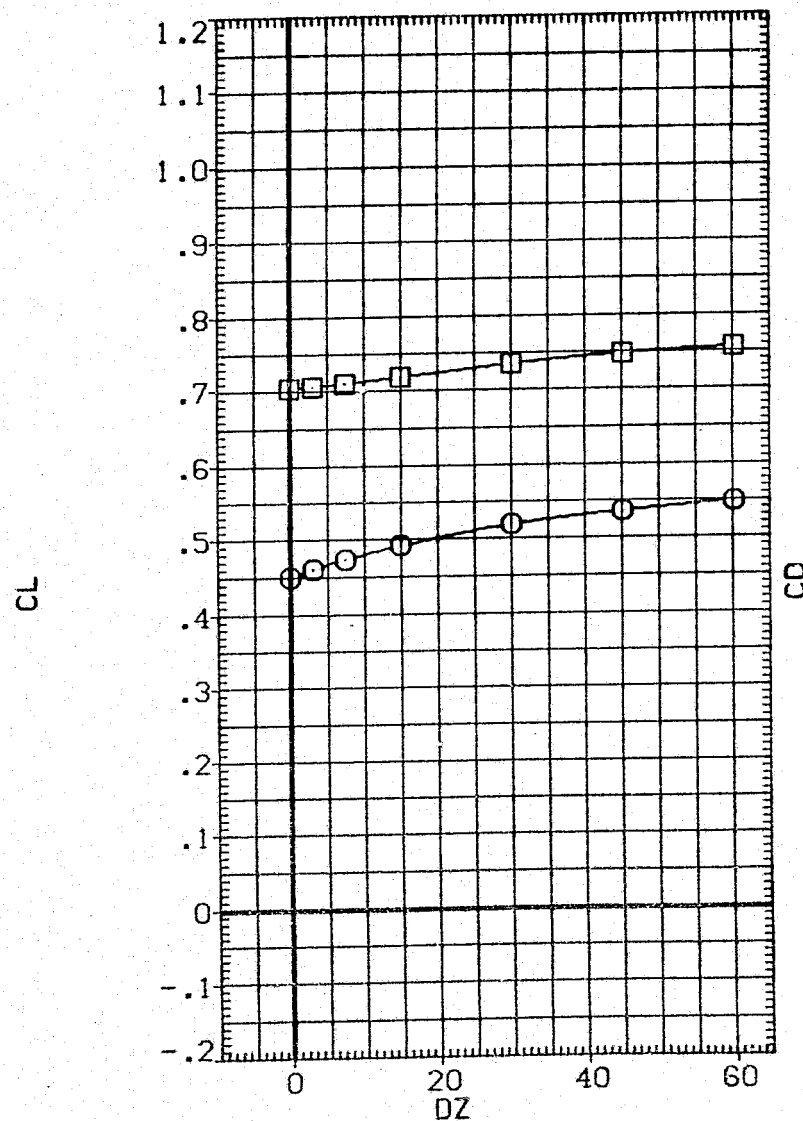


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000	ELEVON	.000	MACH	3.000
□	14.000	PHI	5.000	BETA0	.600
		BETAC	7.500	DY	-5.000
		DX	.000	ALPHAC	10.000
					4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

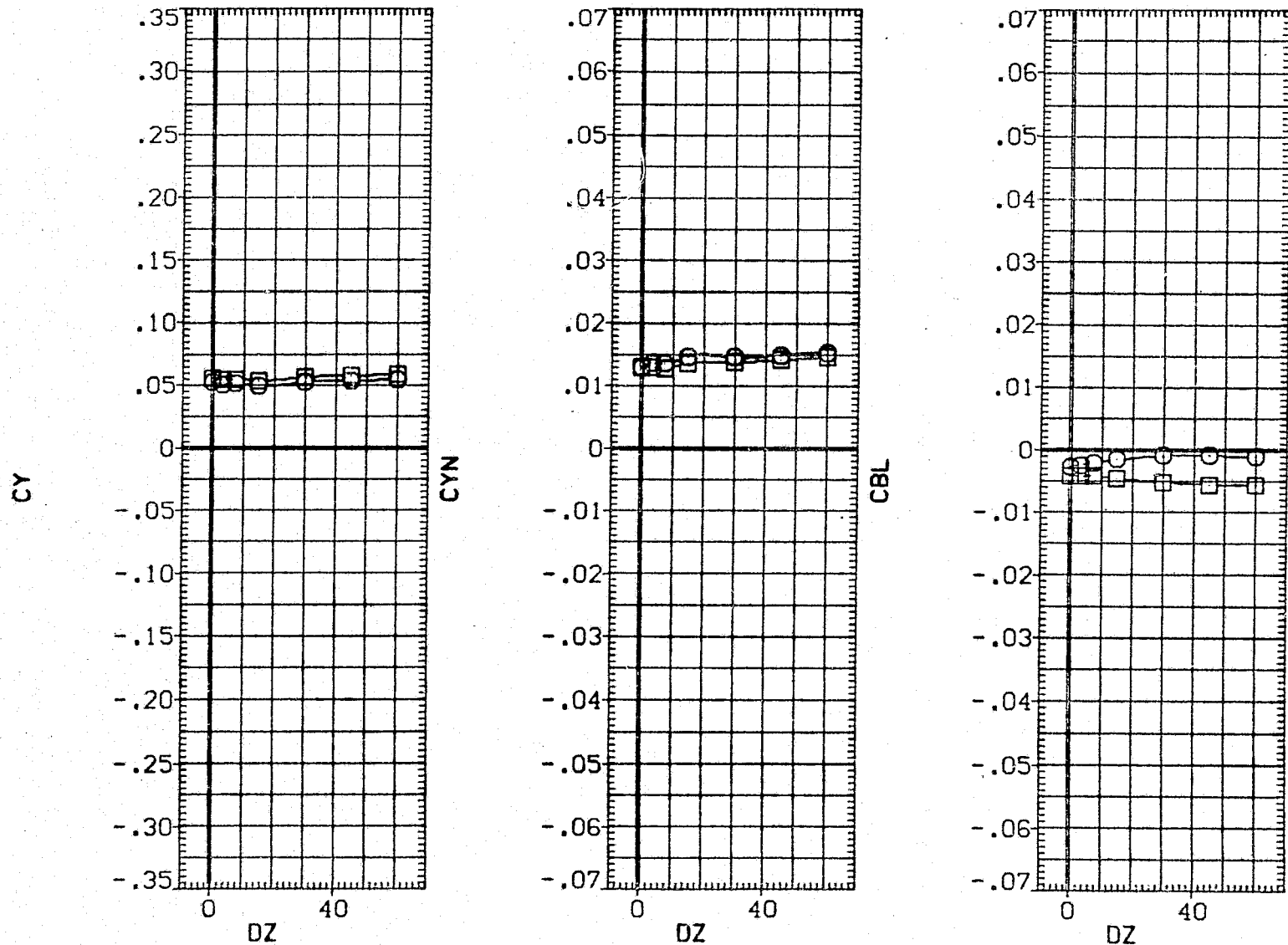


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (098 - 007)(VGN098)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	OX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

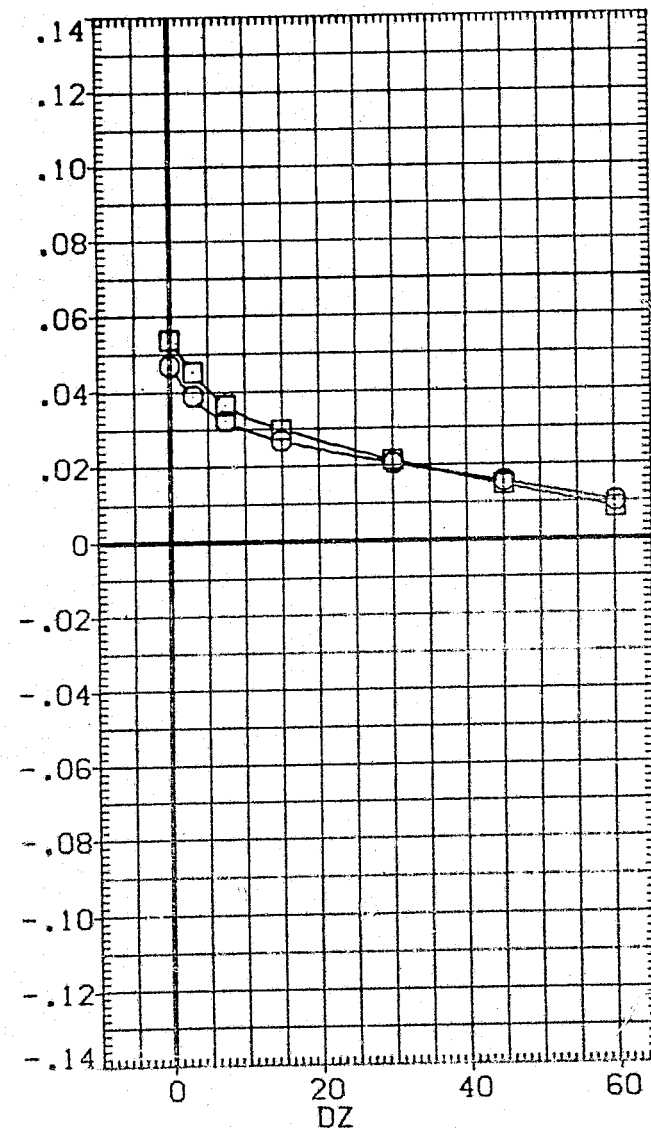
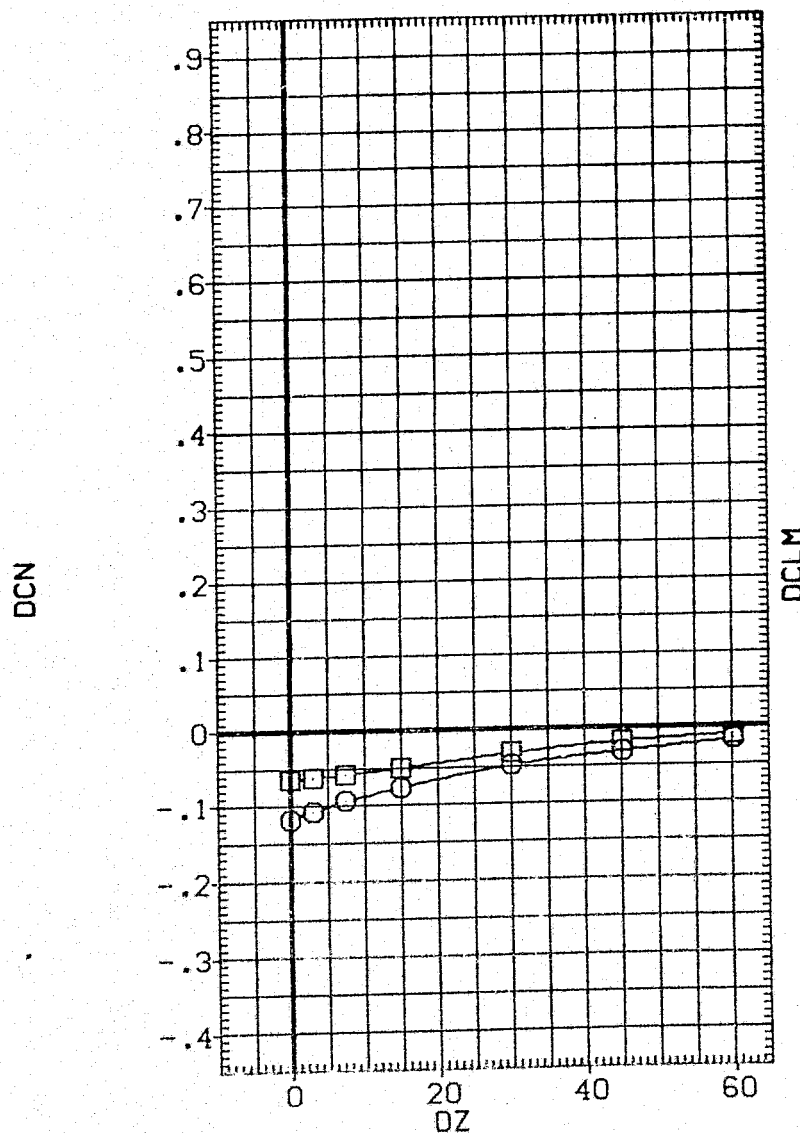


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XM RP	1109.0000	IN.X0
YM RP	.0000	IN.Y0
ZM RP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

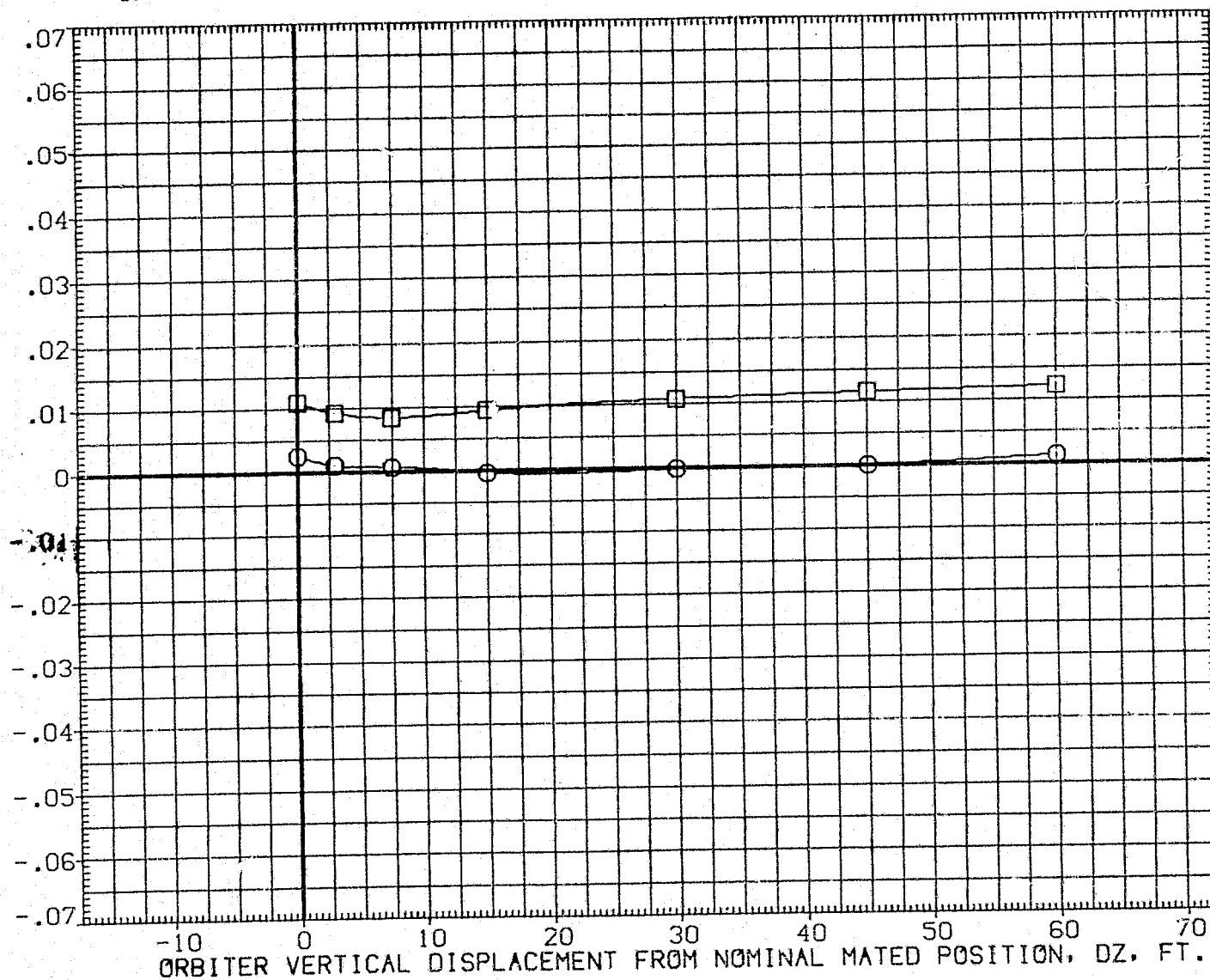


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) . D/S (098 - 007) (VGN098)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY 10.000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

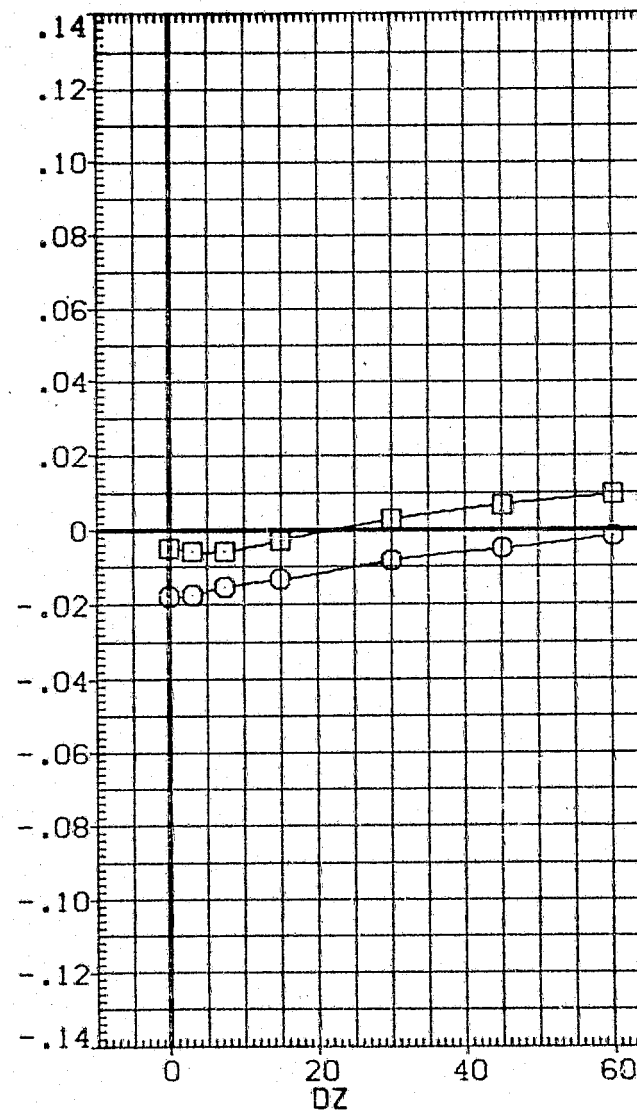
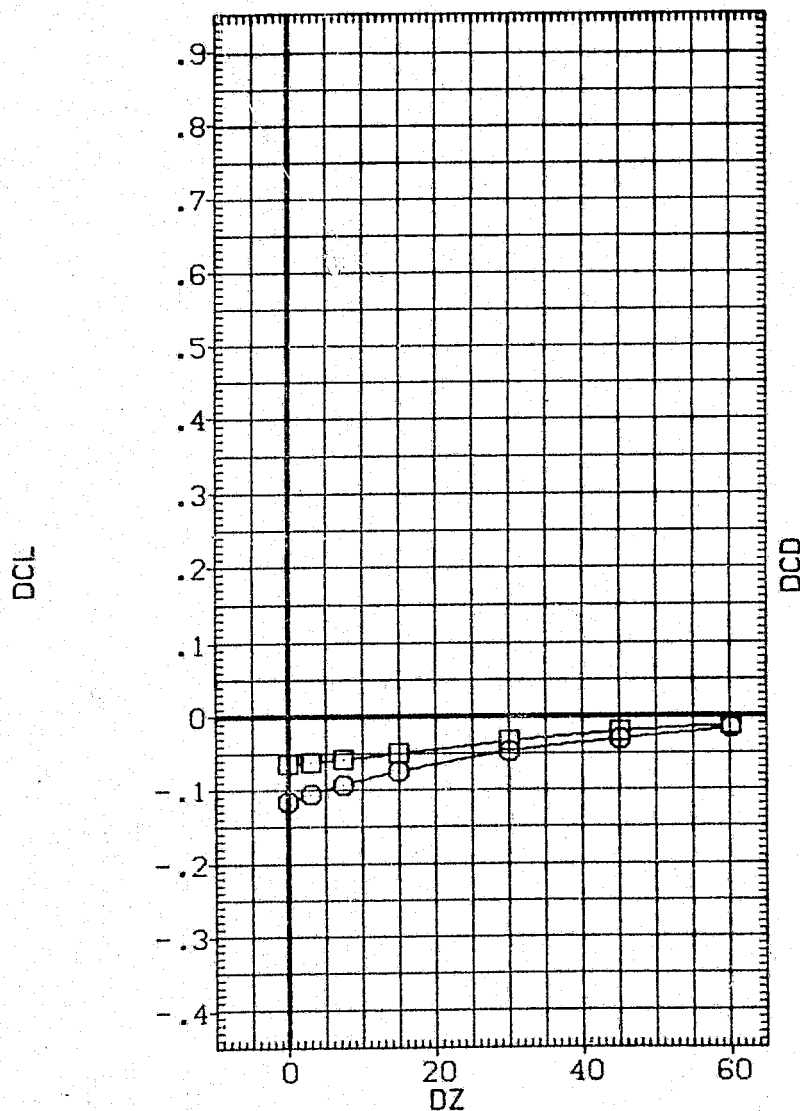


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	3.000
○	10.000	ELEVON	5.000	MACH	.600
□	14.000	BETA0	-5.000	BETAC	.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SD.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

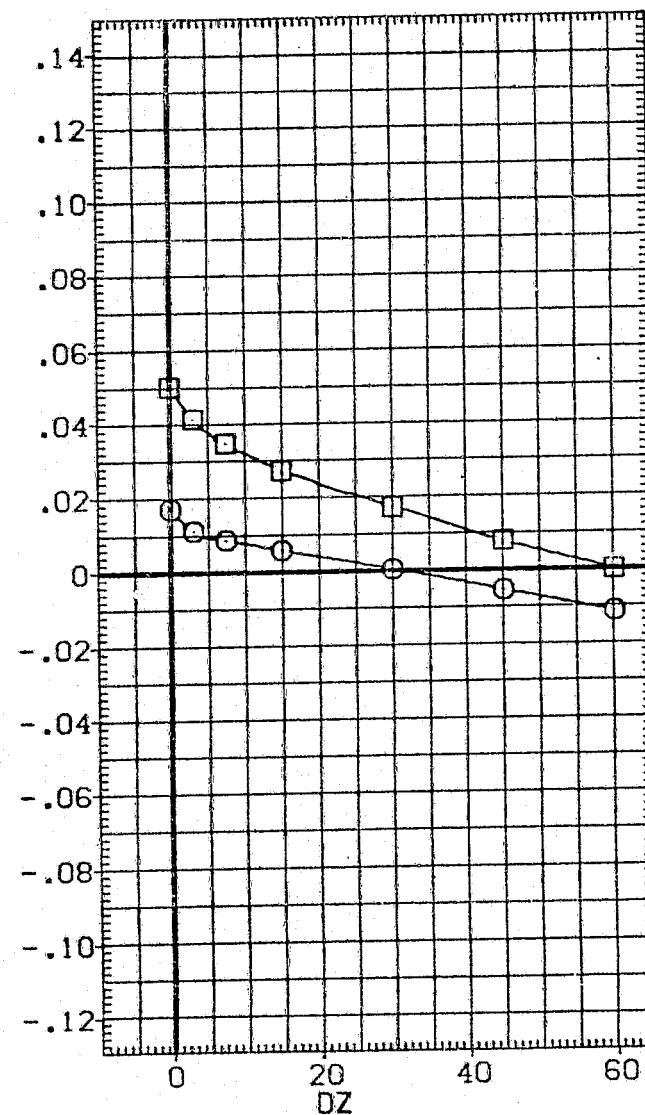
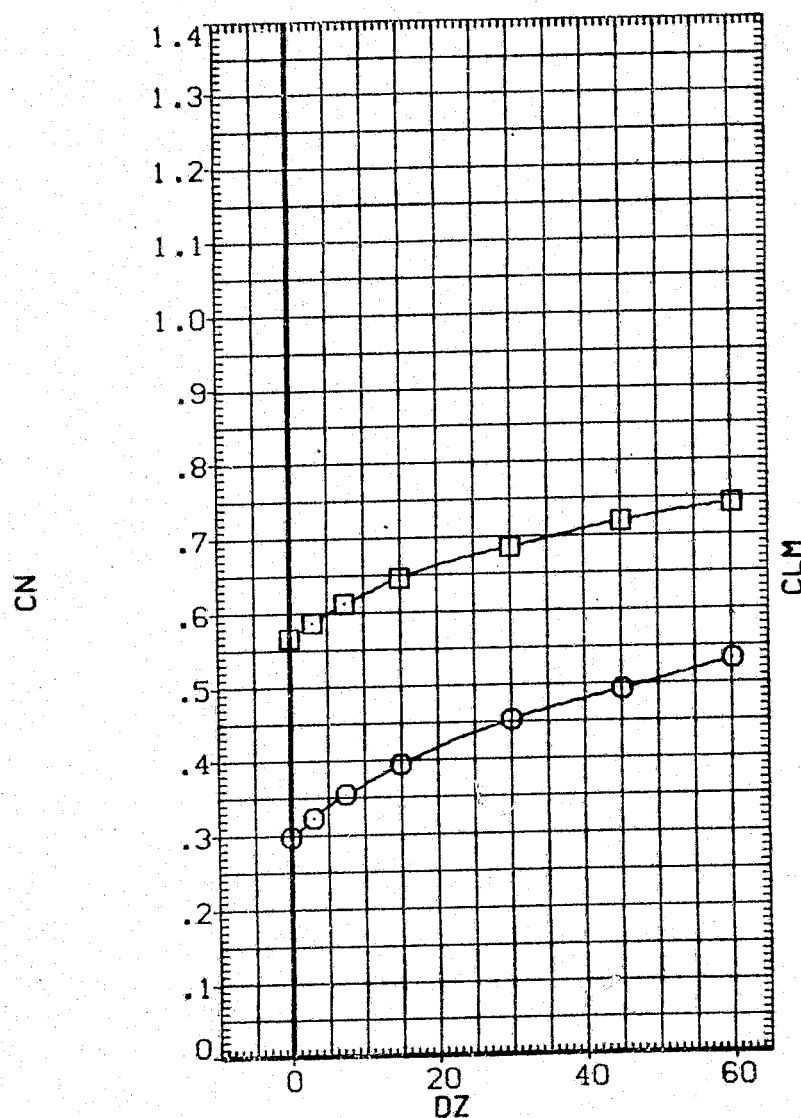


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN099)

SYMBOL	ALPHA	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 BETAC .000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

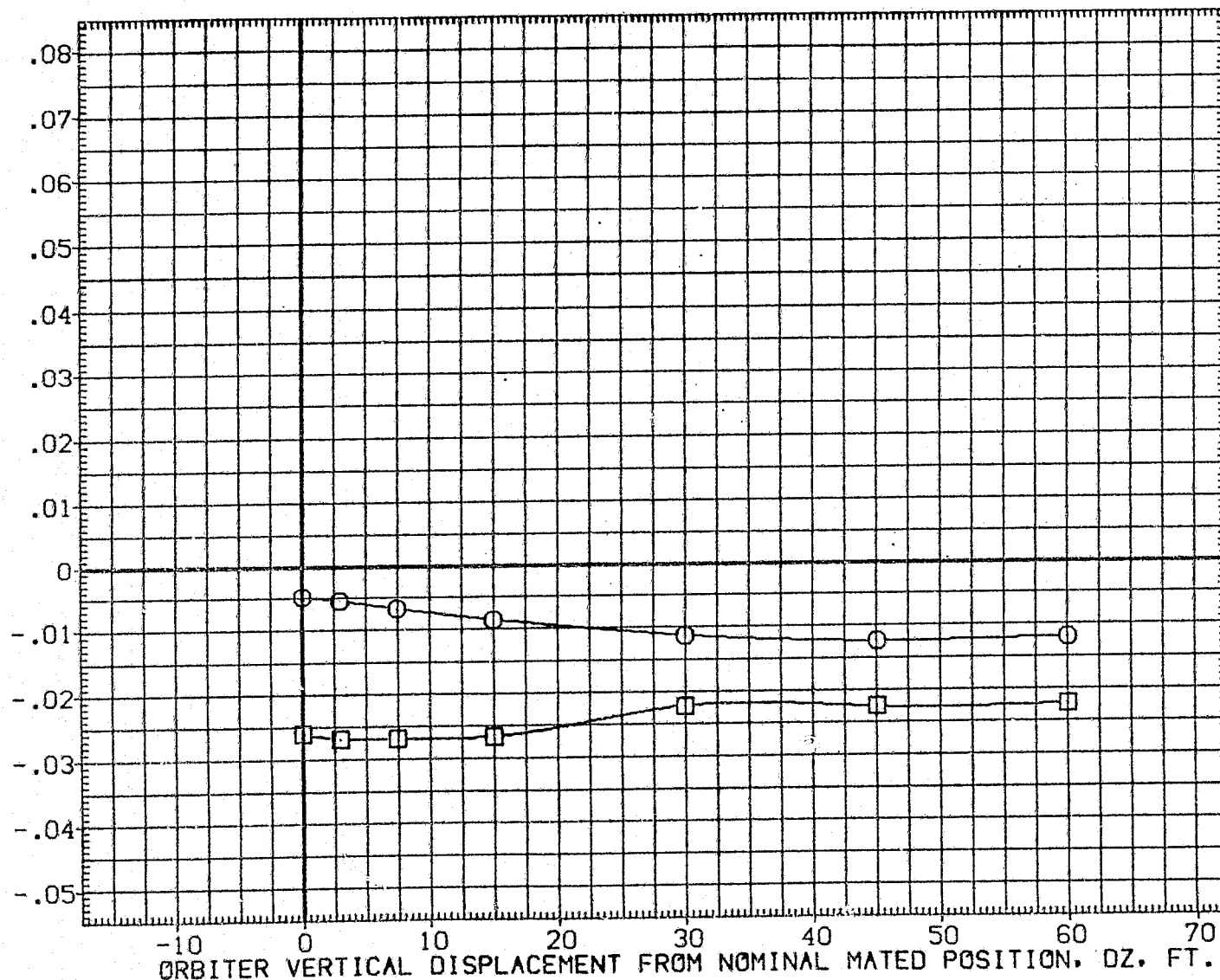


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
	BETA0 -5.000	BETAC .000
	PHI 7.500	DY 10.000
	DX .000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

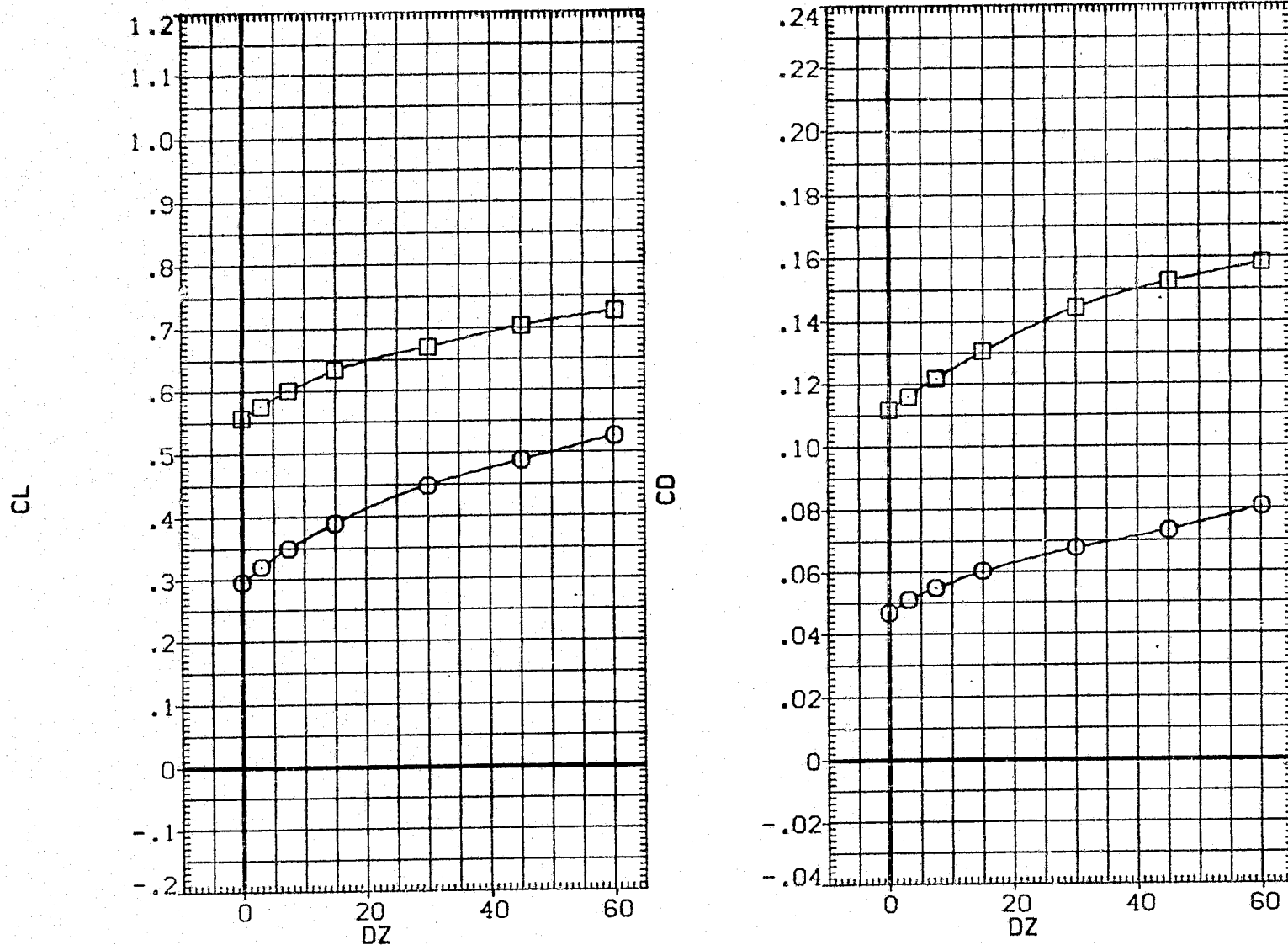


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN099)

SYMBOL	ALPHA0		PARAMETRIC VALUES		
	10.000	ELV-1B	.000	ELV-0B	3.000
○	14.000	ELEVON	5.000	MACH	.600
□		BETA0	-5.000	BETAC	.000
		PHI	7.500	DY	10.000
		OX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

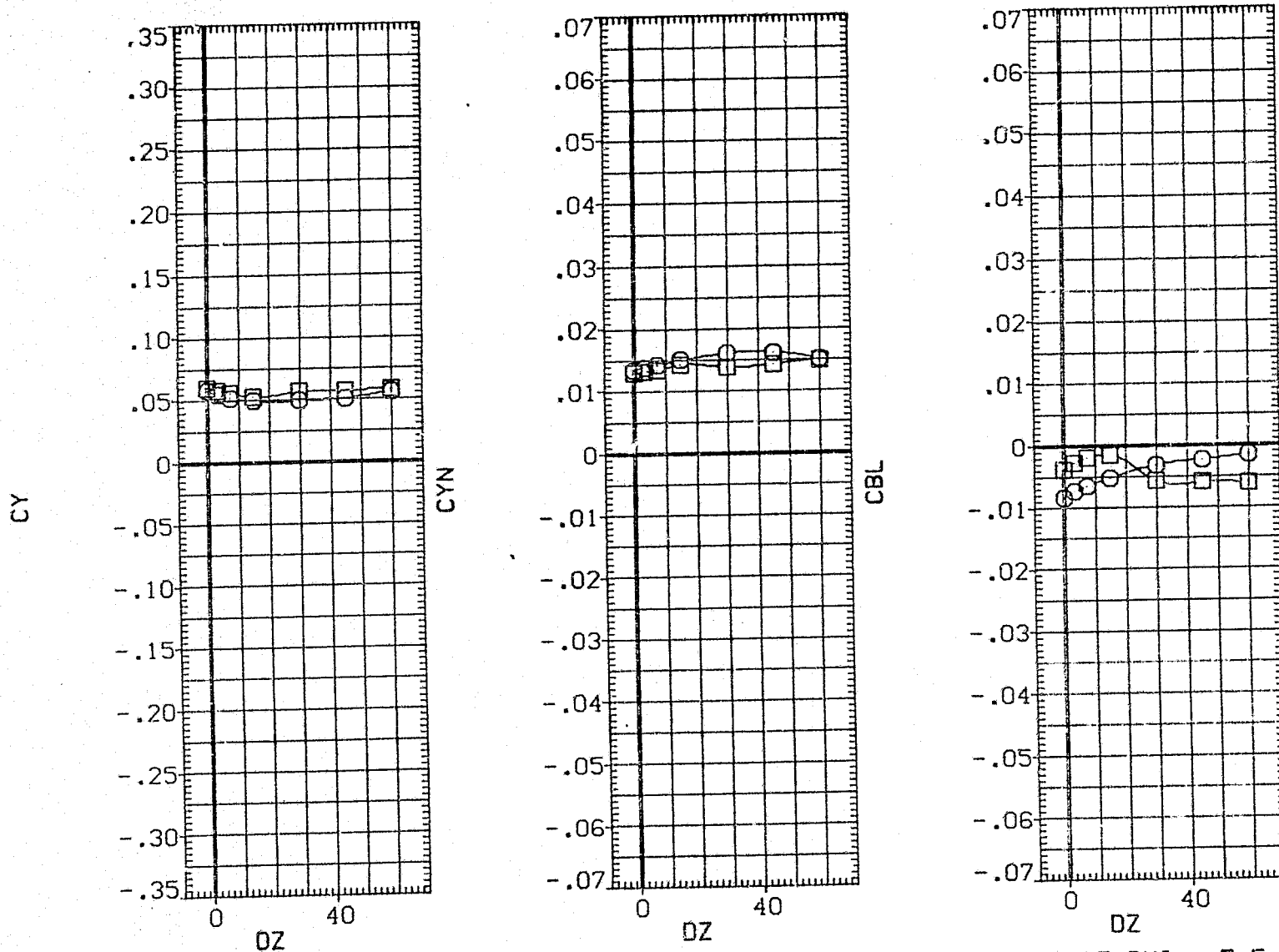


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL



ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

.000

ELV-0B

3.000

MACH

.600

DX

.000

BETA0

-5.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

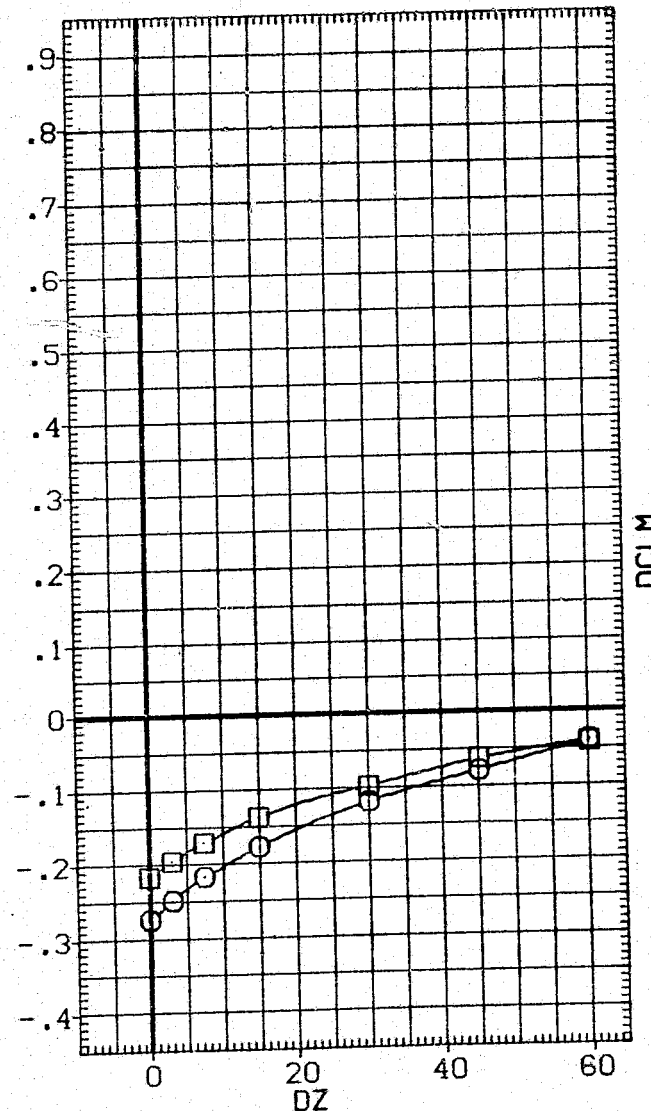
IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

DCN



DCLM

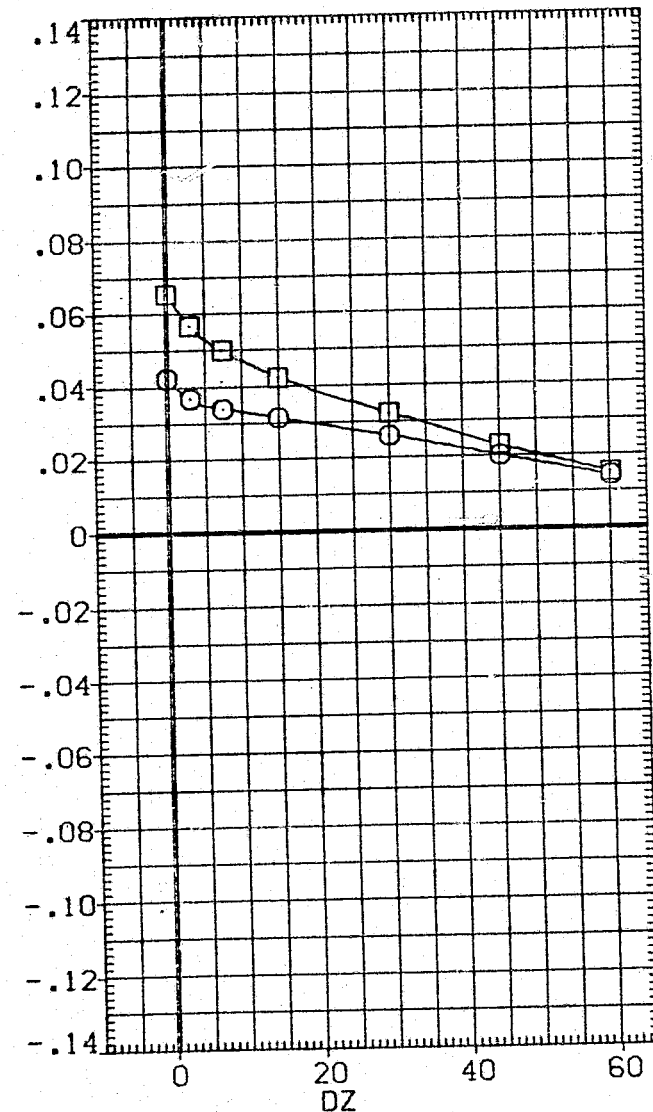


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (099 - 007) (VGN099)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

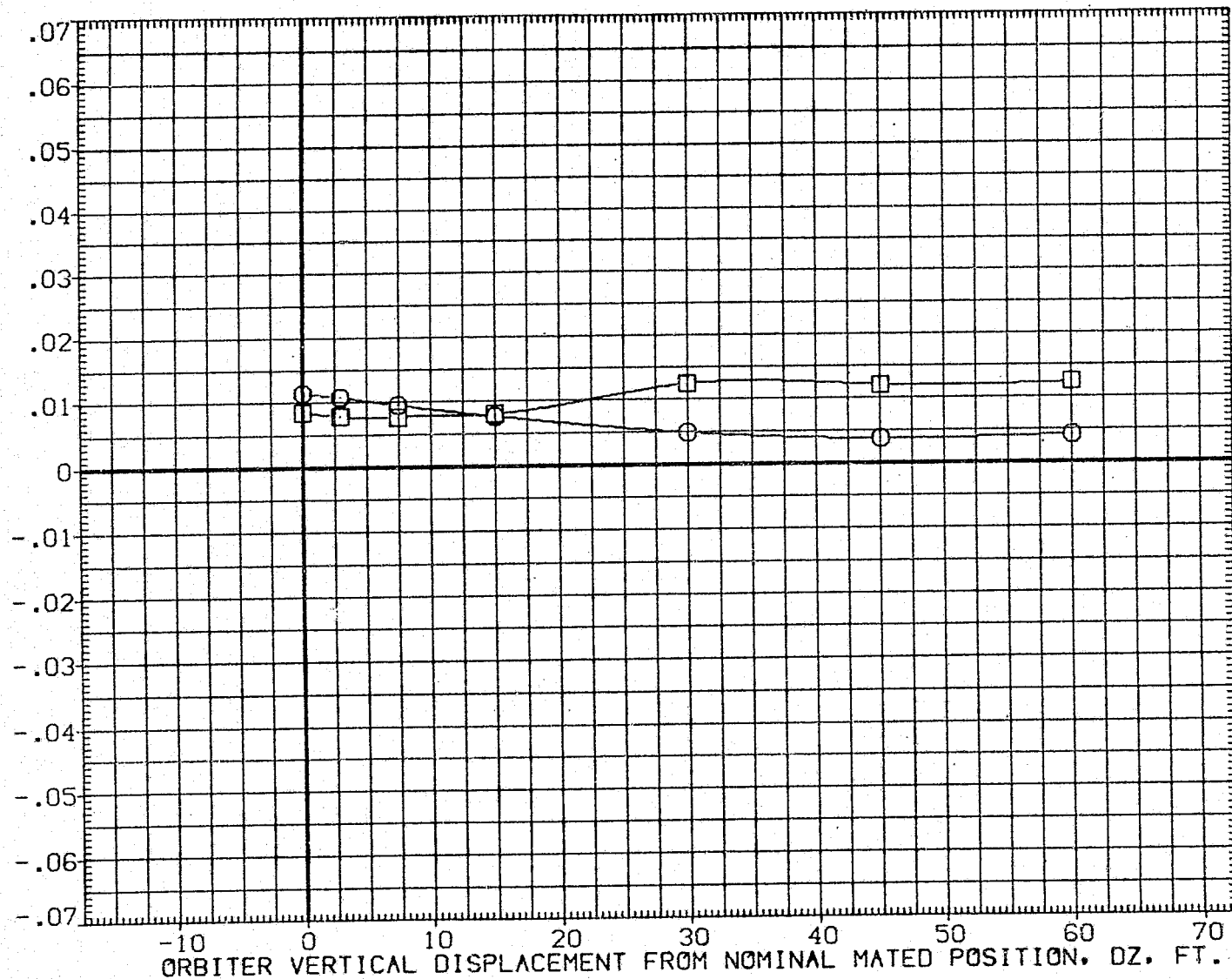


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY 10.000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

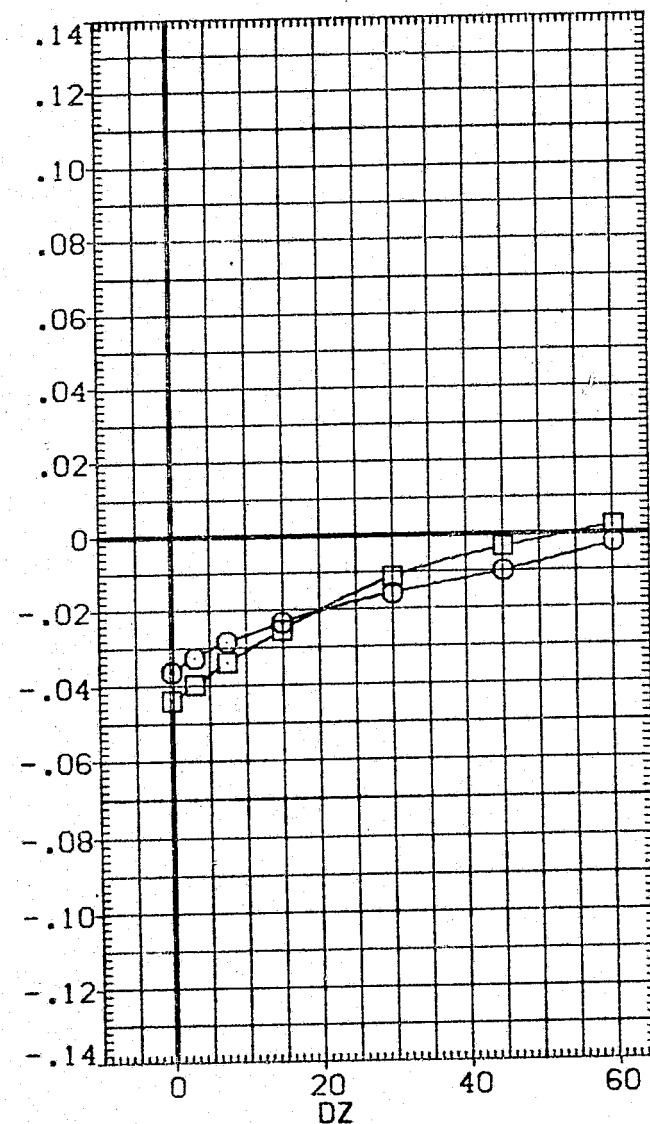
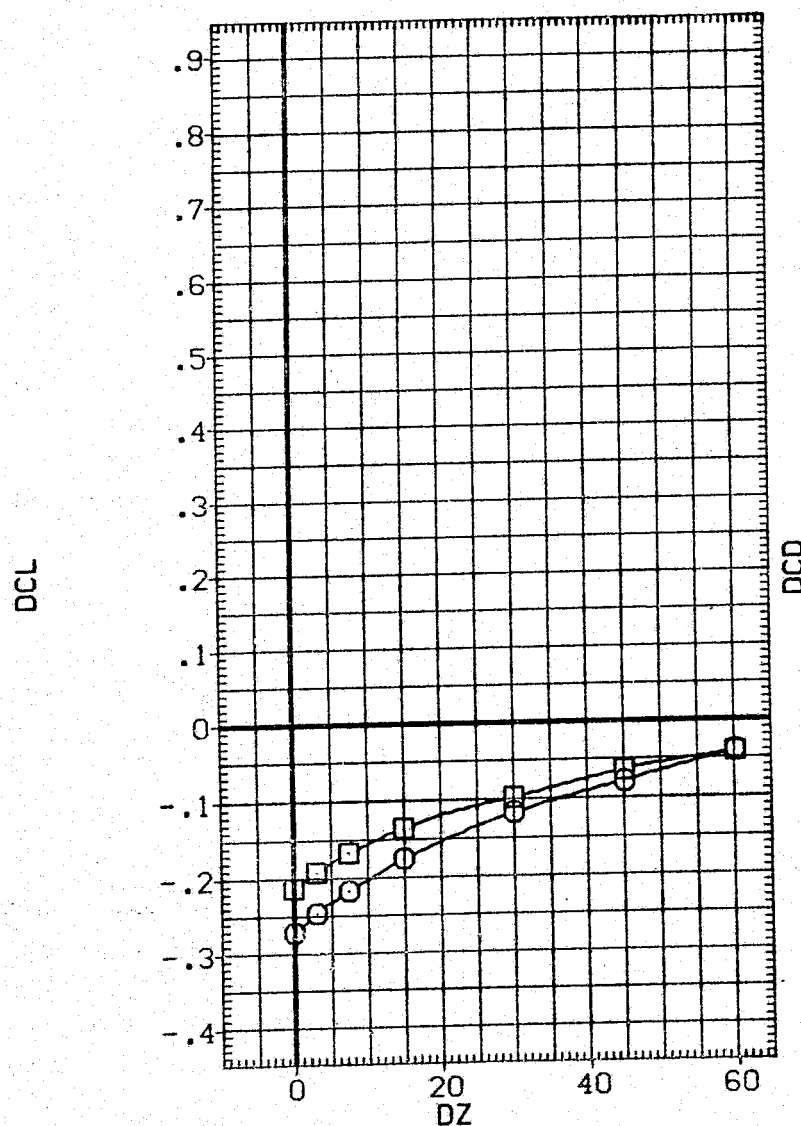


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN100)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	5.000
		PHI	7.500	DY	10.000
		DX	.000	ALFAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

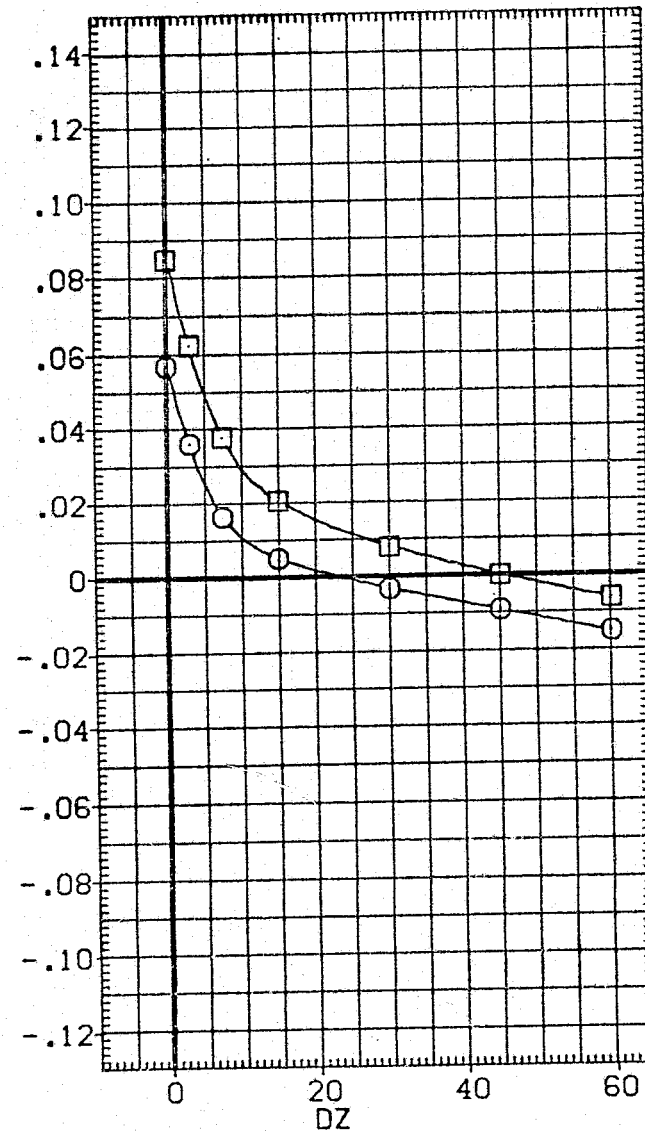
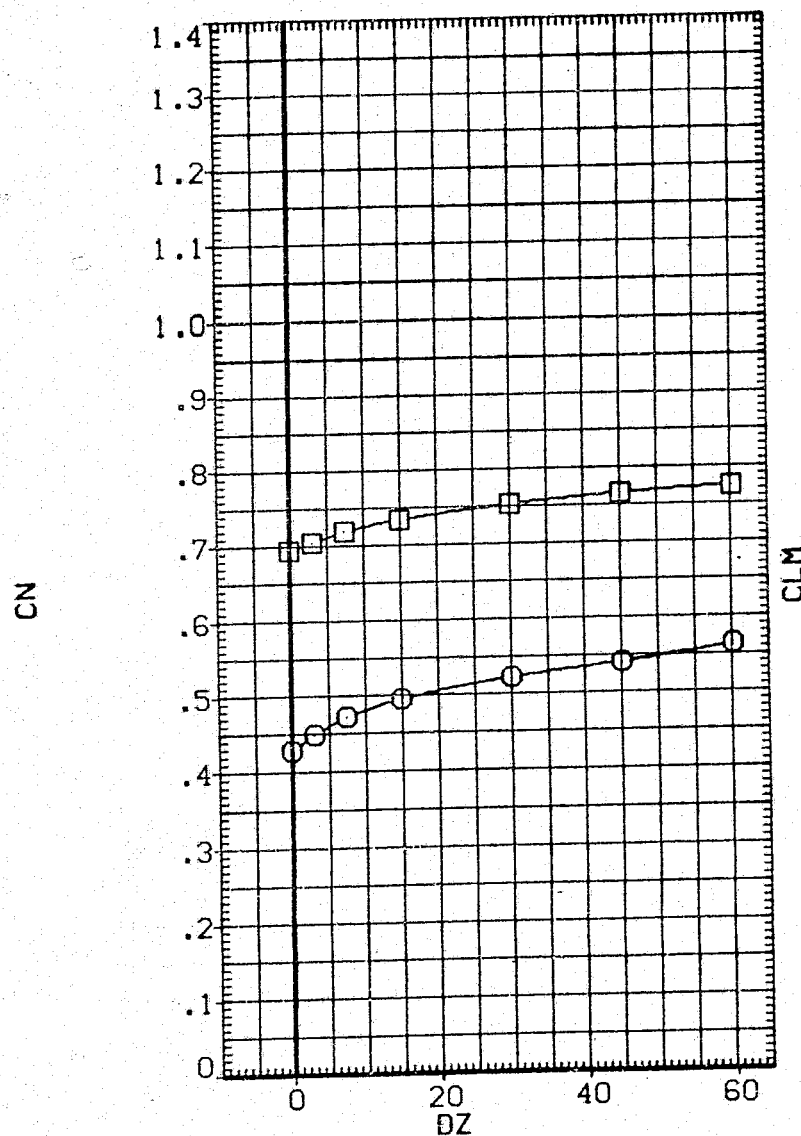


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	BETAC	5.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

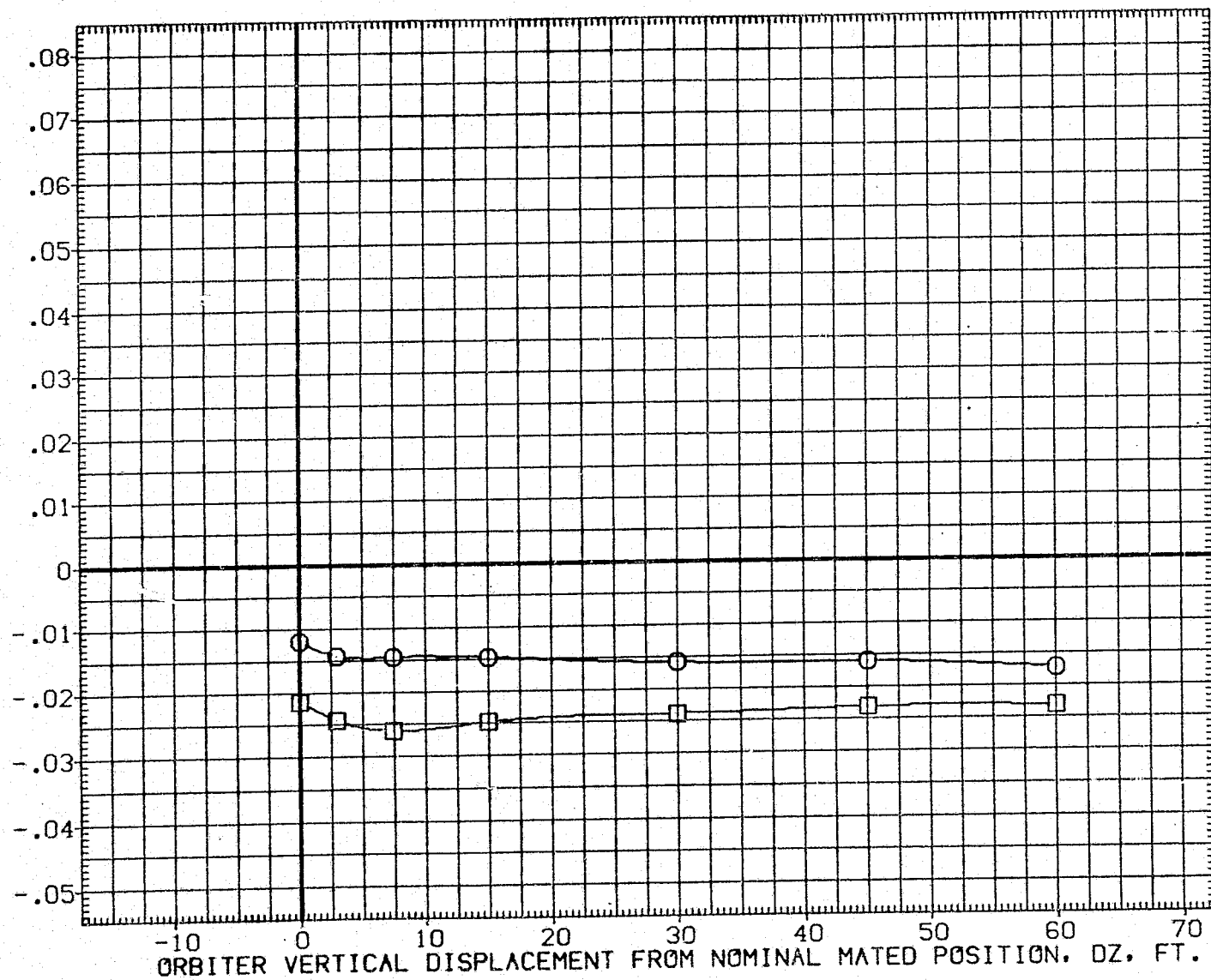


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN100)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 BETAC 5.000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

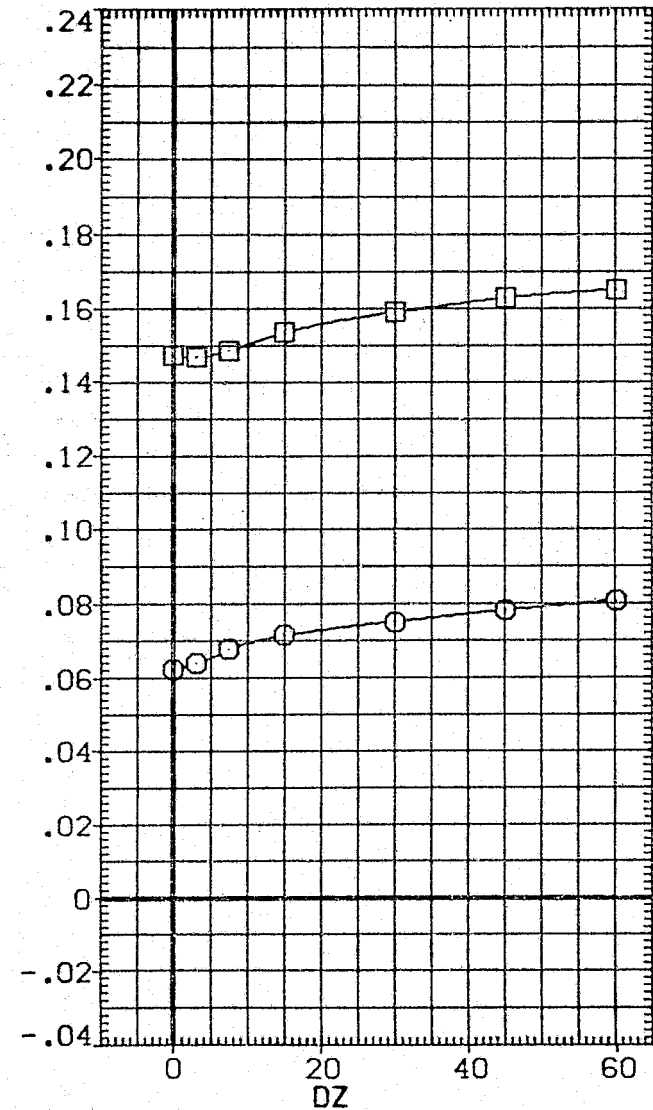
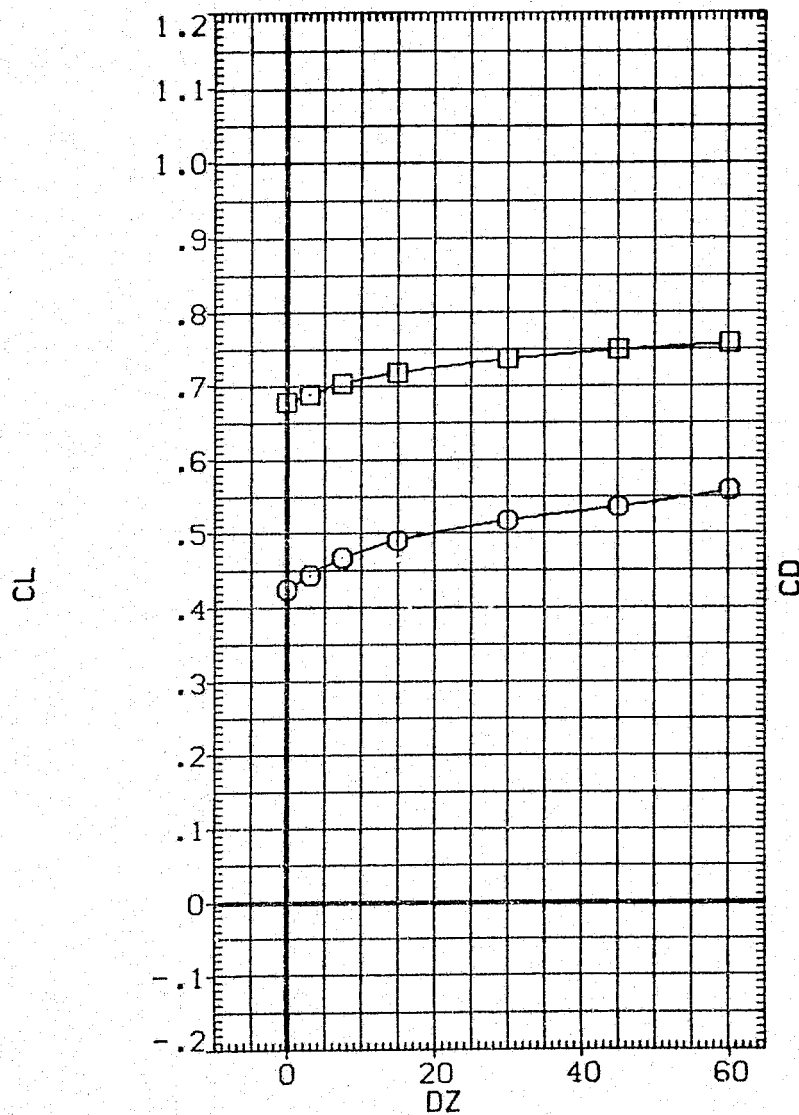


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN100)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000	ELEV0N	.000	MACH	3.000
□	14.000	BETA3	-5.000	BETAC	.600
		PHI	7.500	DY	5.000
		DX	.000	ALPHAC	10.000
					4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
OREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

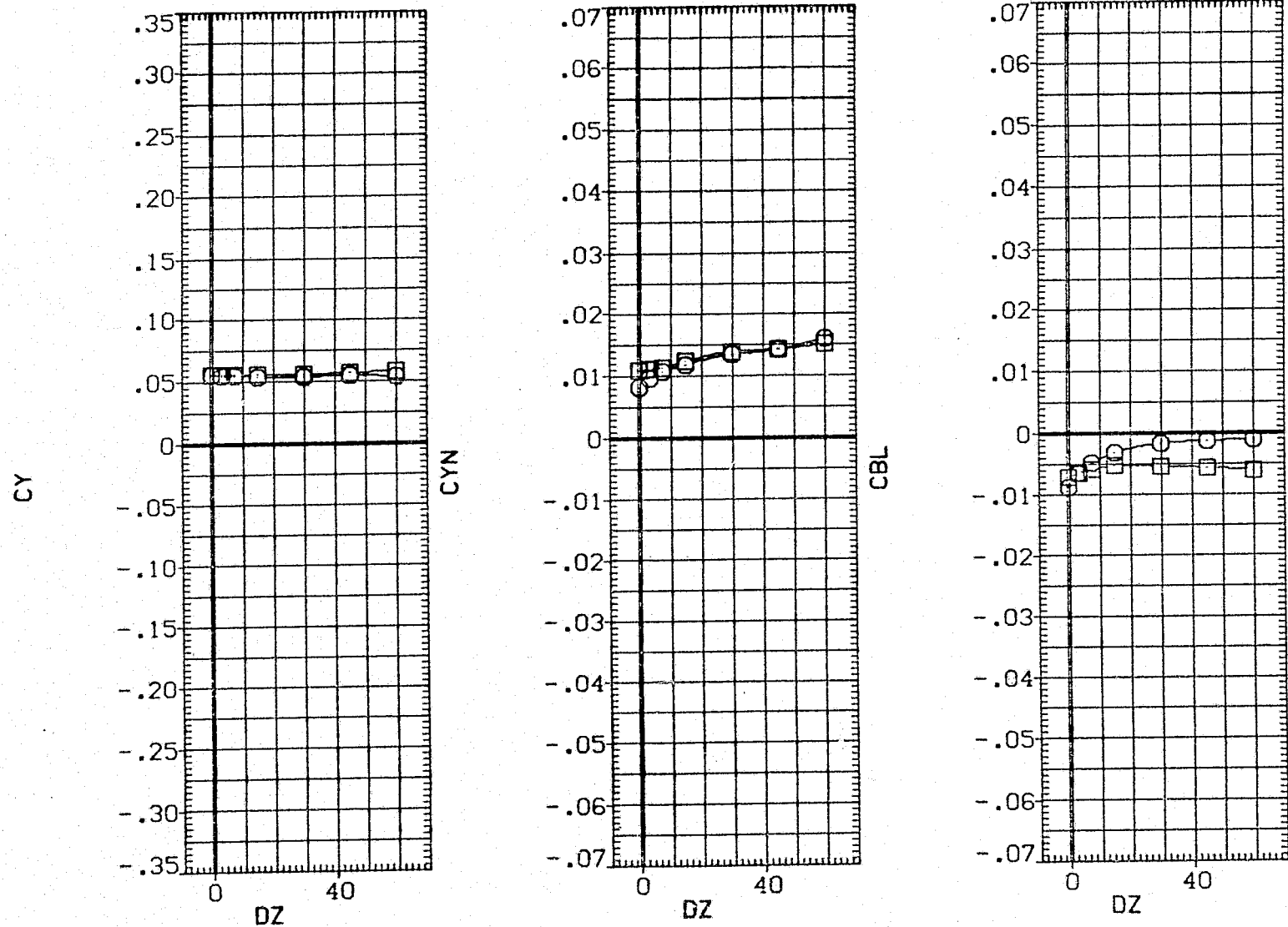


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (100 - 007) (VGN100)

SYMBOL



ALPHA0

10.000
14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

7.500

10.000

BETAC

ELV-OB

MACH

DX

BETA0

5.000

3.000

.600

.000

-5.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

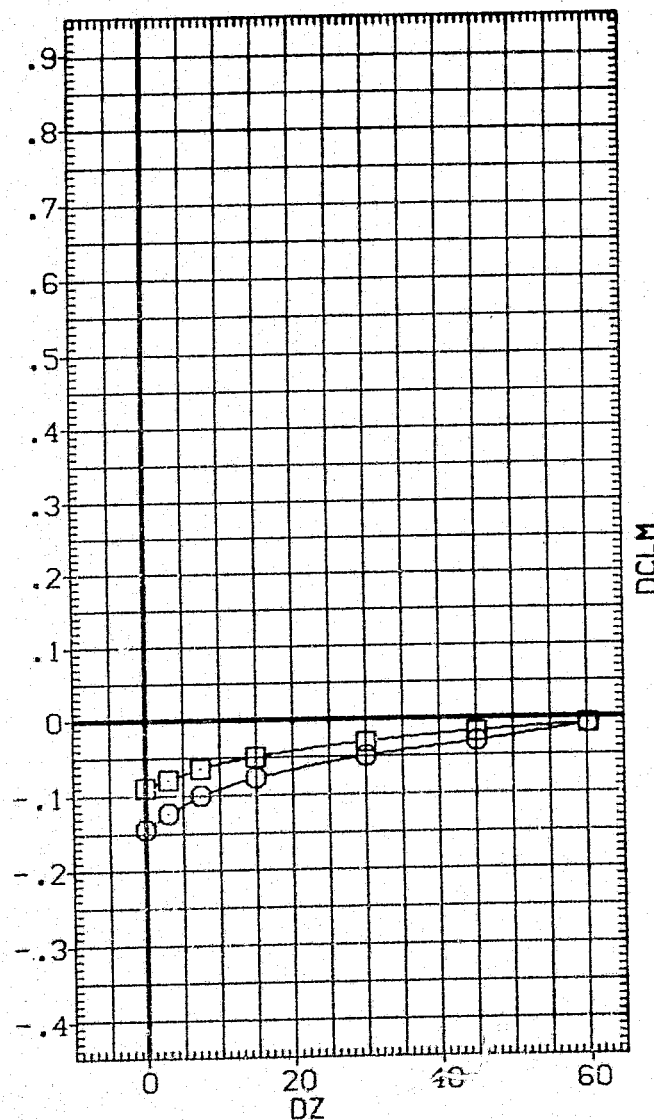
IN.

IN.X0

IN.Y0

IN.Z0

DCN



DCLM

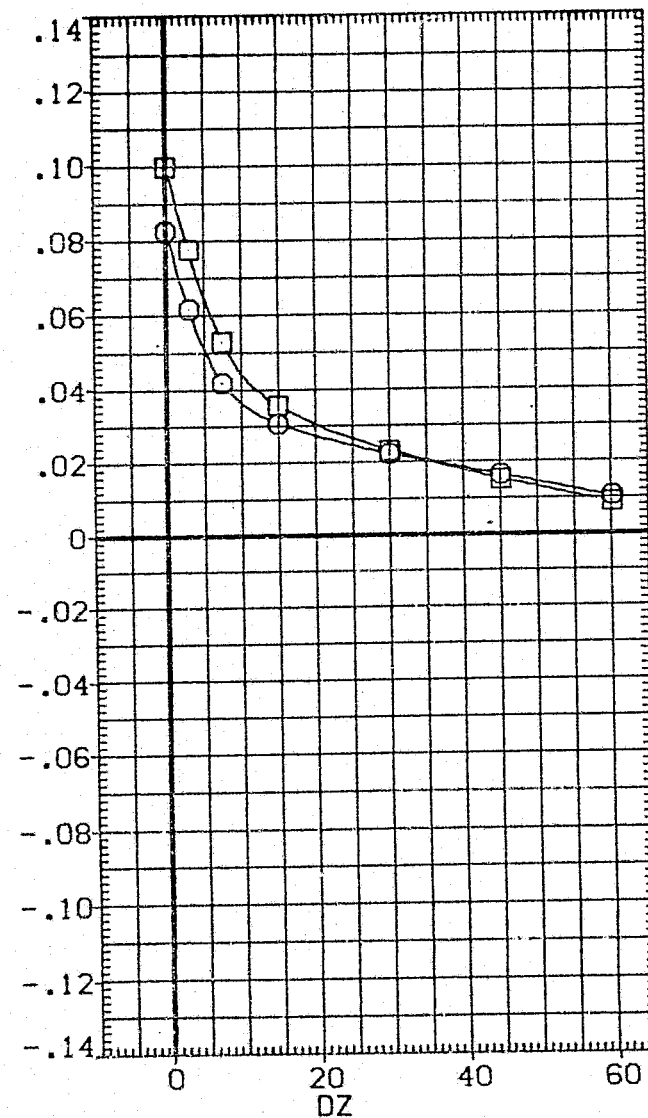


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL
○
□

ALPHA0
10.000
14.000

ALPHAC
ELV-1B
ELEVON
PHI
CY

PARAMETRIC VALUES

4.000 BETAC 5.000
.000 ELV-0B 3.000
5.000 MACH .600
7.500 DX .000
10.000 BETA0 -5.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

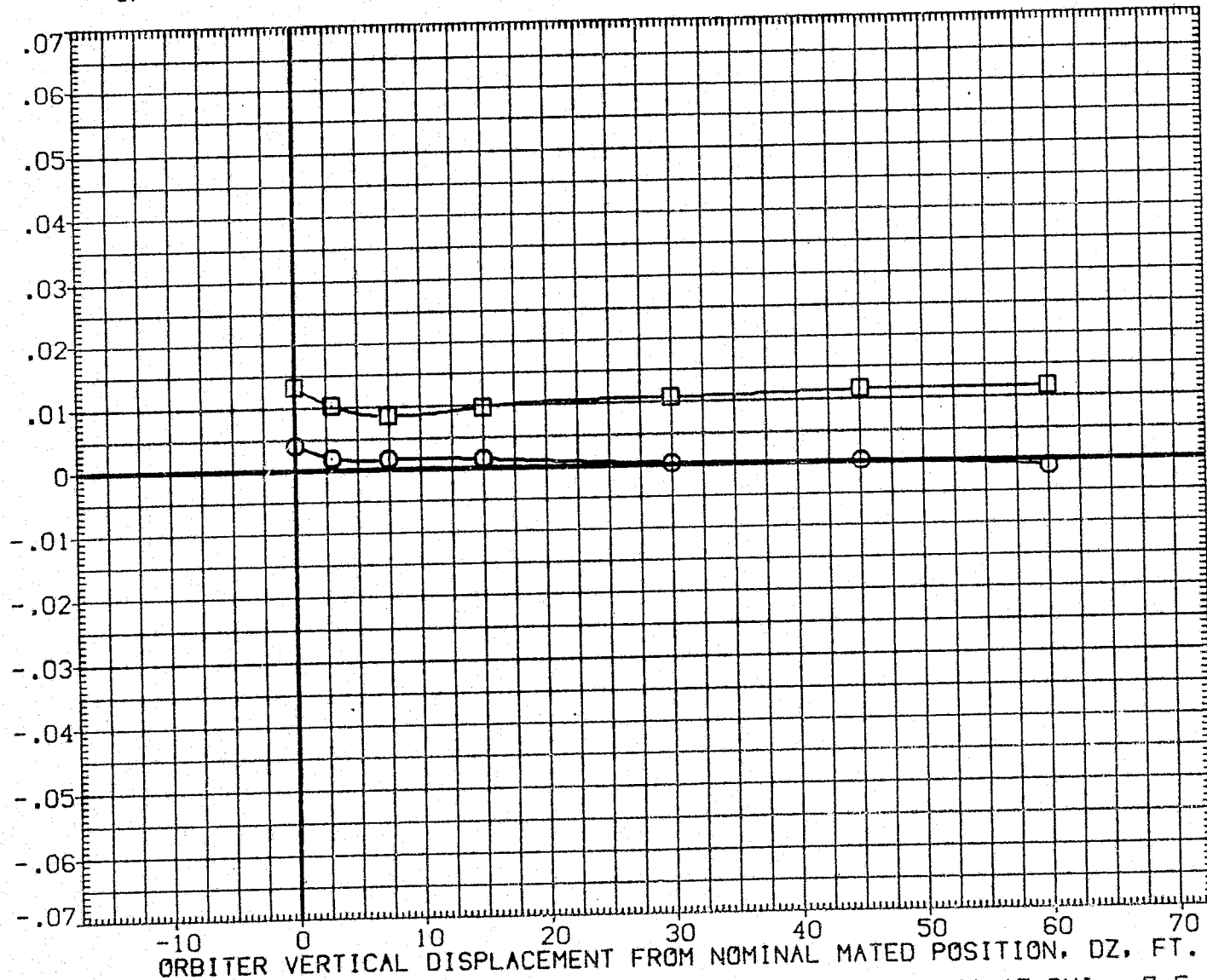


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (100 - 007)(VGN100)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHA0	4.000	BETAC	5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

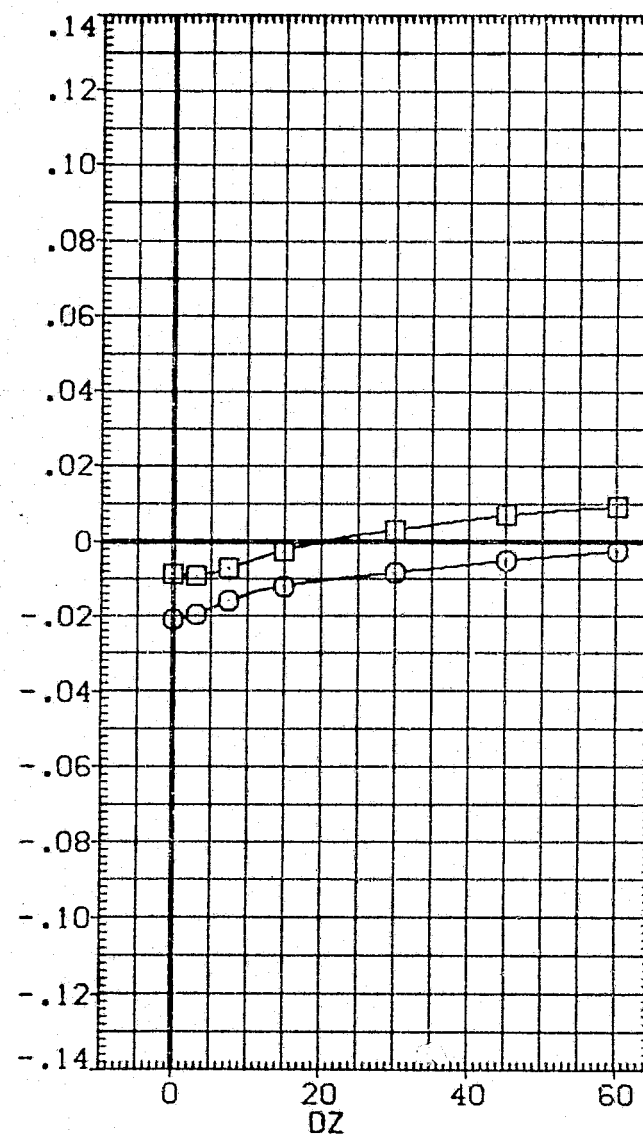
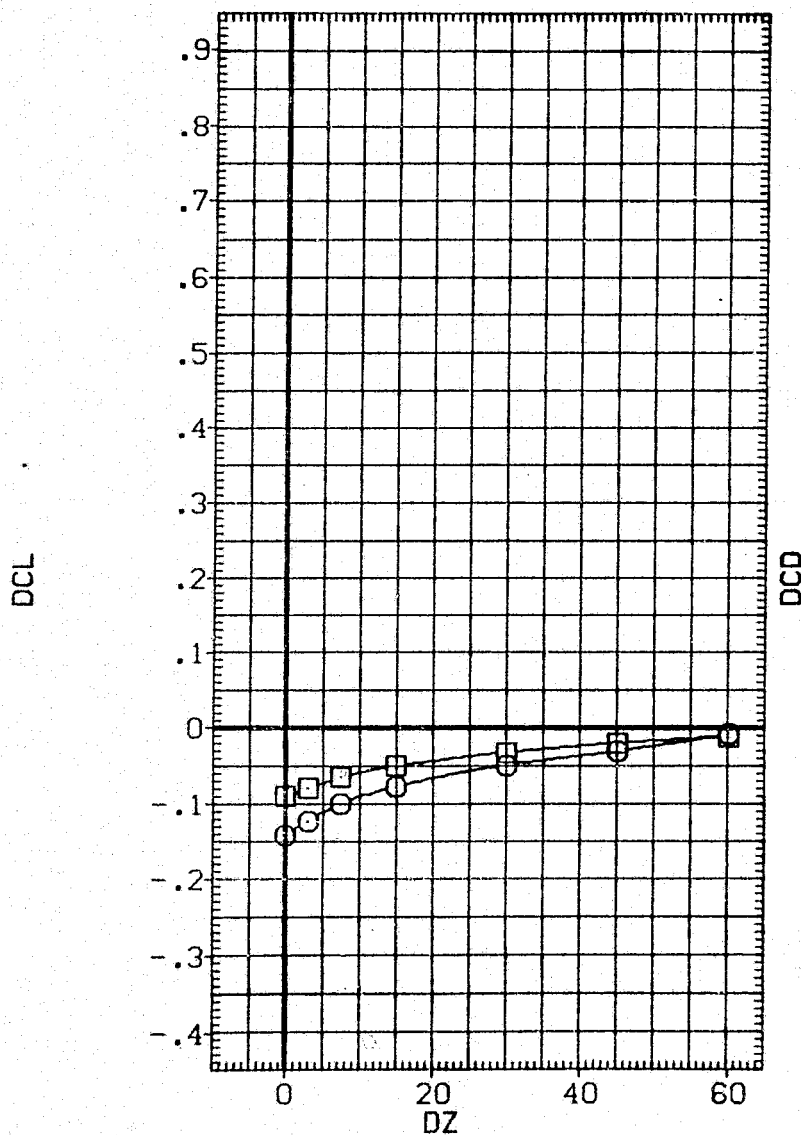


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN101)

SYMBOL

○
□ALPHA0
10.000
14.000ELV-1B
ELEVON
PHI
BETAC
DX

PARAMETRIC VALUES

.000	ELV-08	3.000
5.000	MACH	.600
7.500	BETA0	-5.000
5.000	DY	10.000
.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

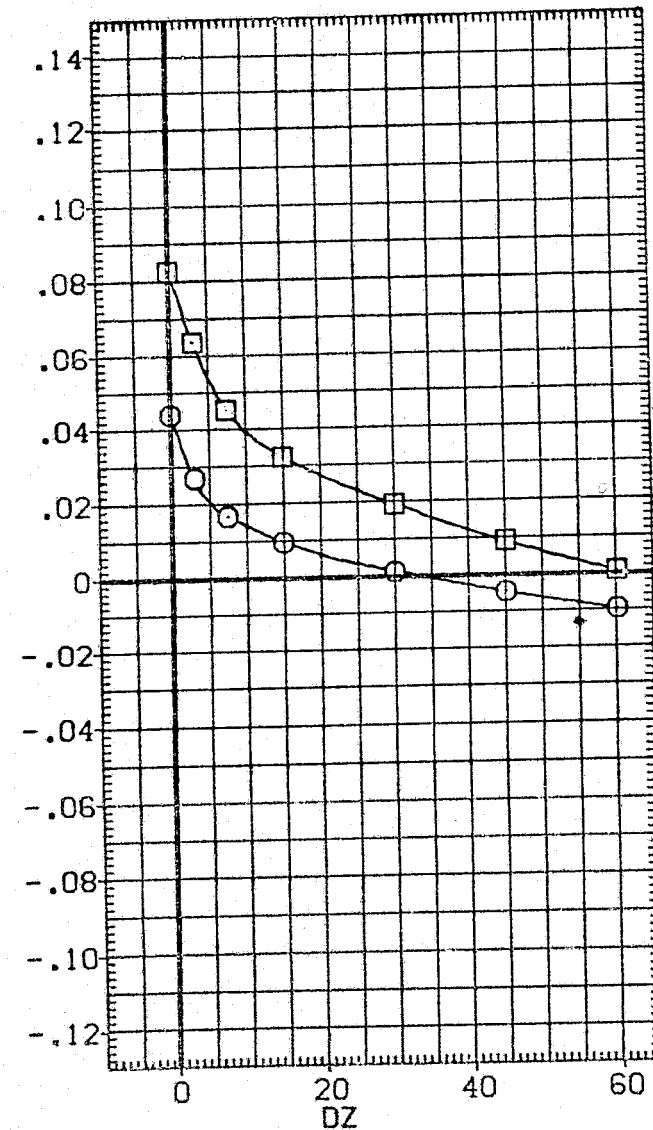
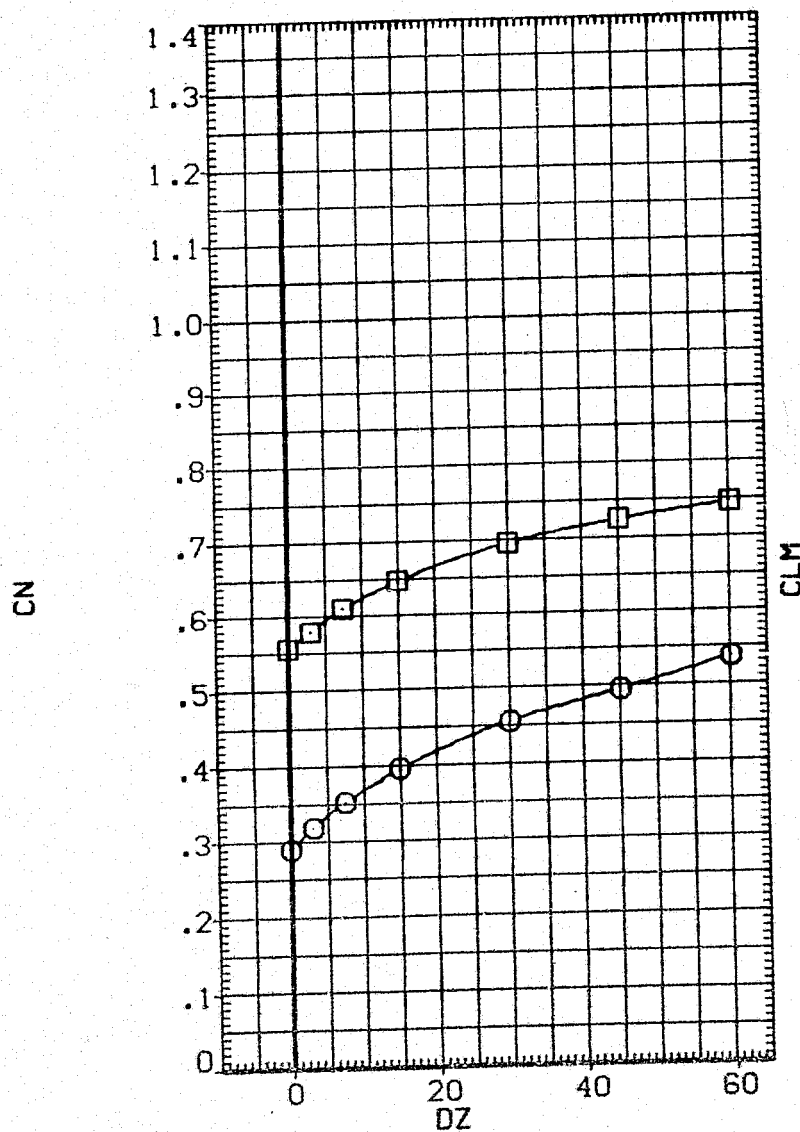


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

PAGE 1100

CA20 747/1 01 S1

ORBITER DATA (NGN101)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	7.500	BETA0	-5.000
		BETAC	5.000	OY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	336.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

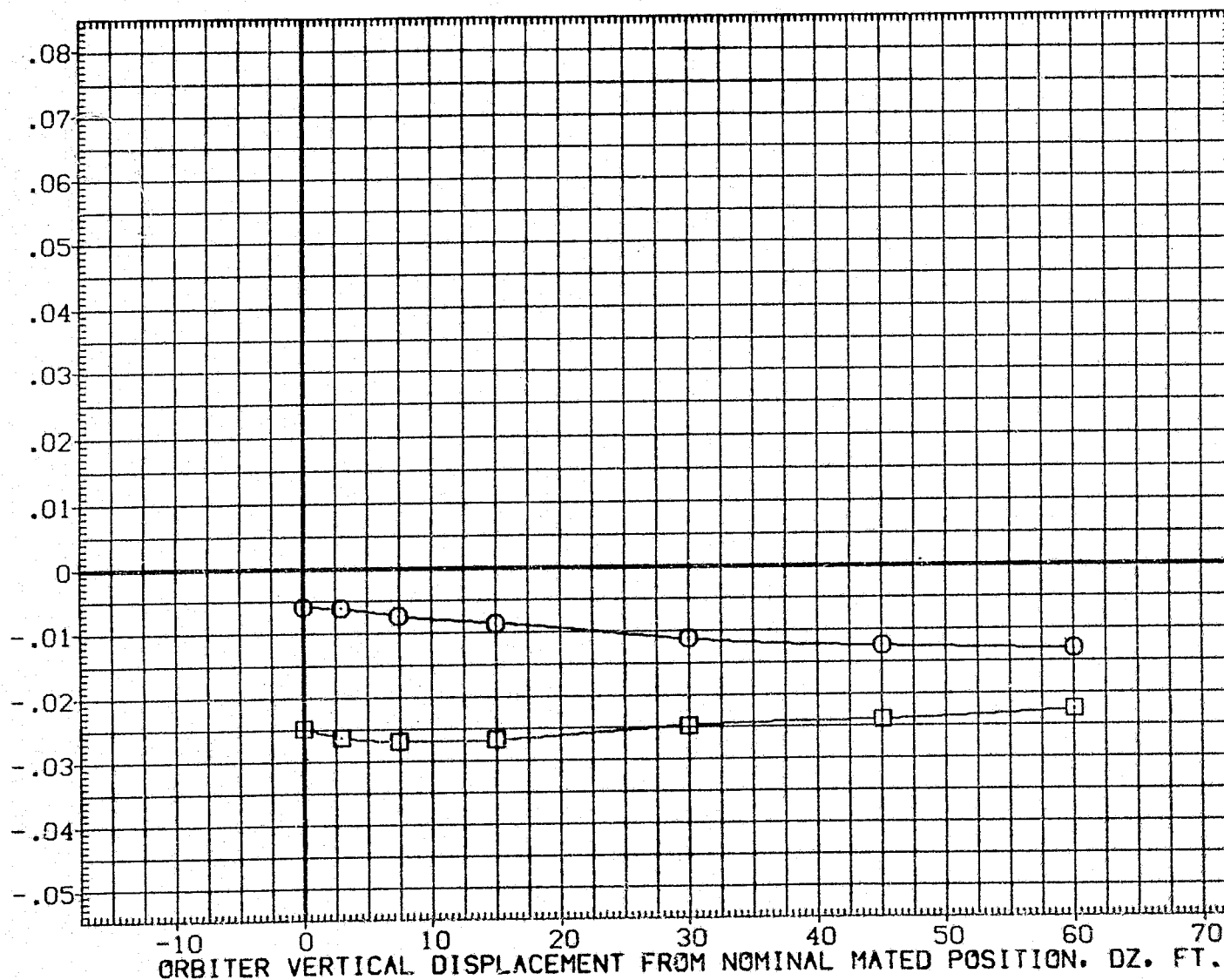


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	7.500	BETA0	-5.000
		BETAC	5.000	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

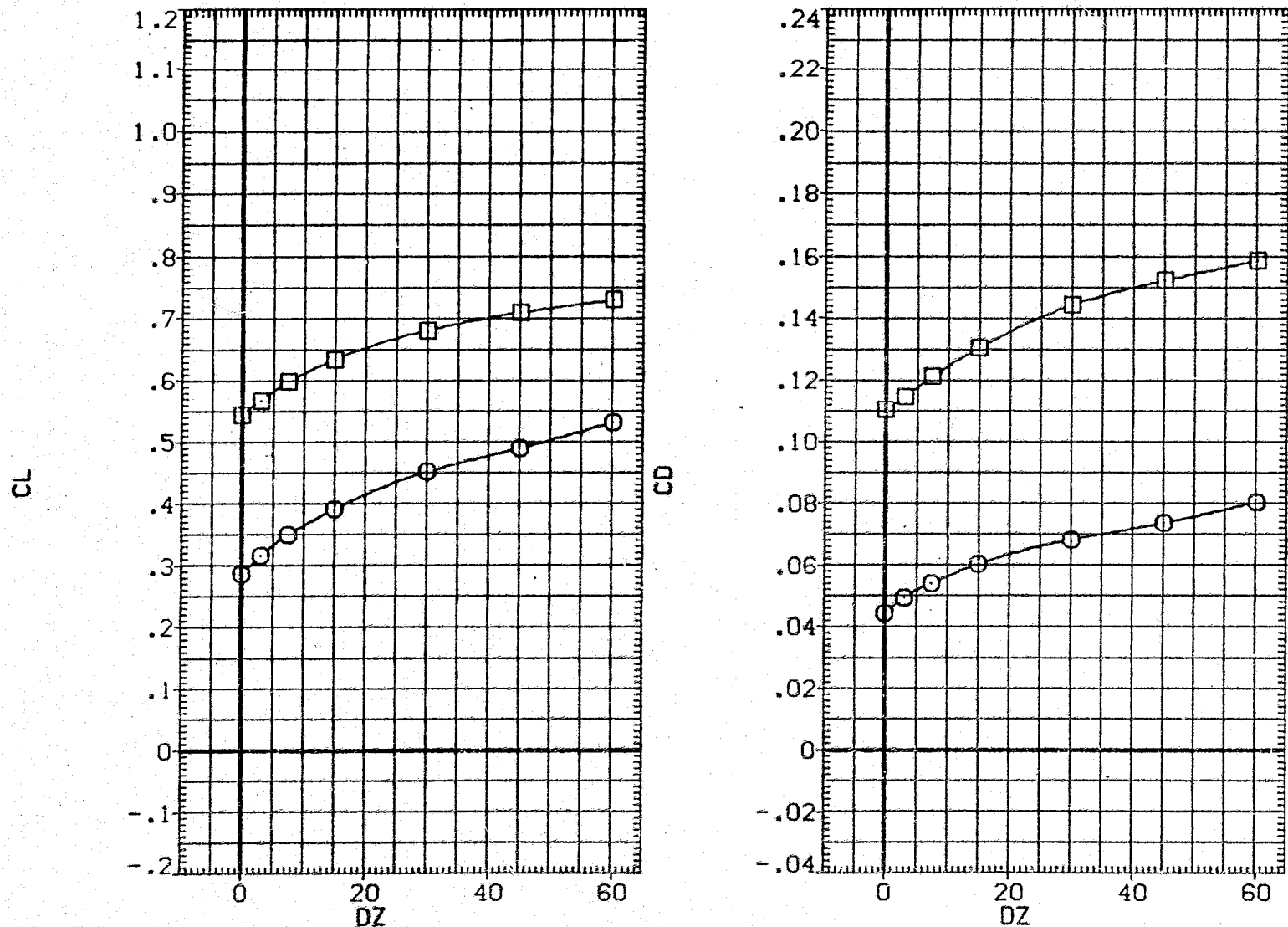


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN101)

SYMBOL	ALPHA0		PARAMETRIC VALUES		
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		PHI	7.500	BETA0	-5.000
		BETAC	5.000	OY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

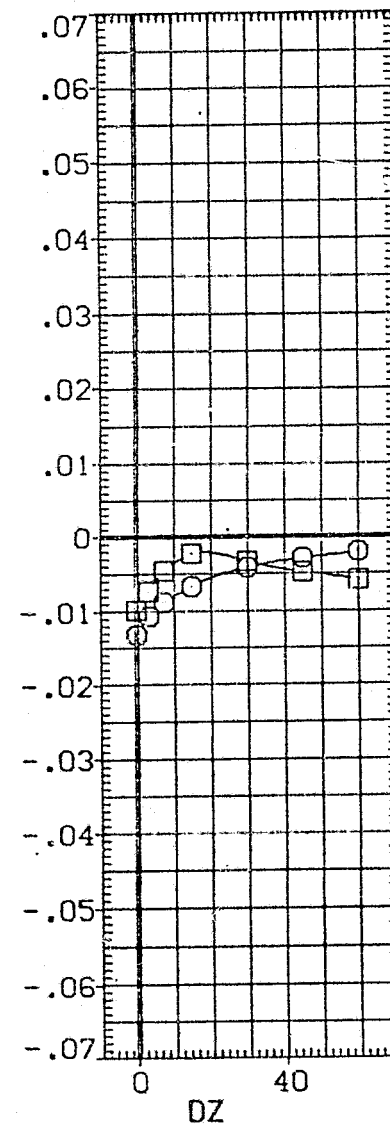
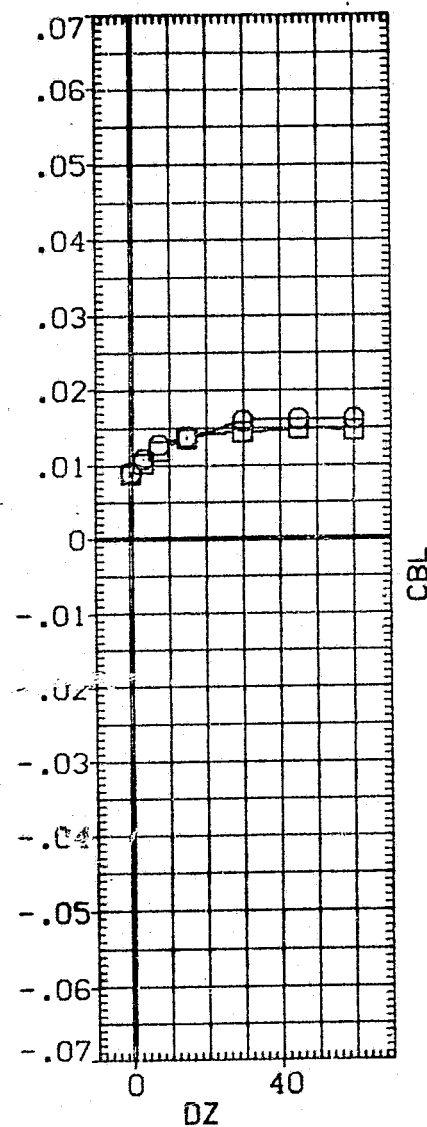
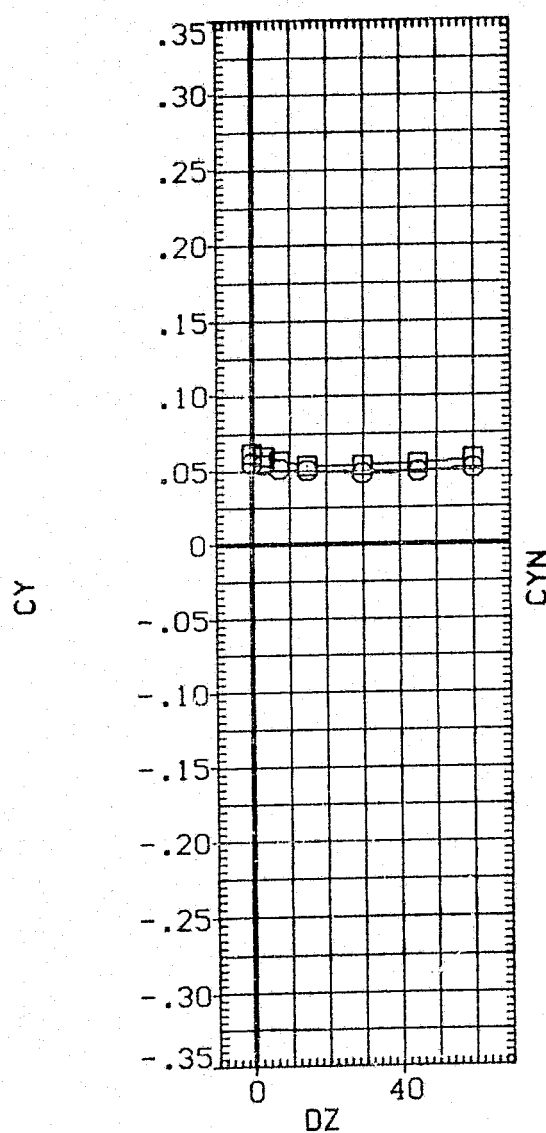


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC 5.000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY 10.000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

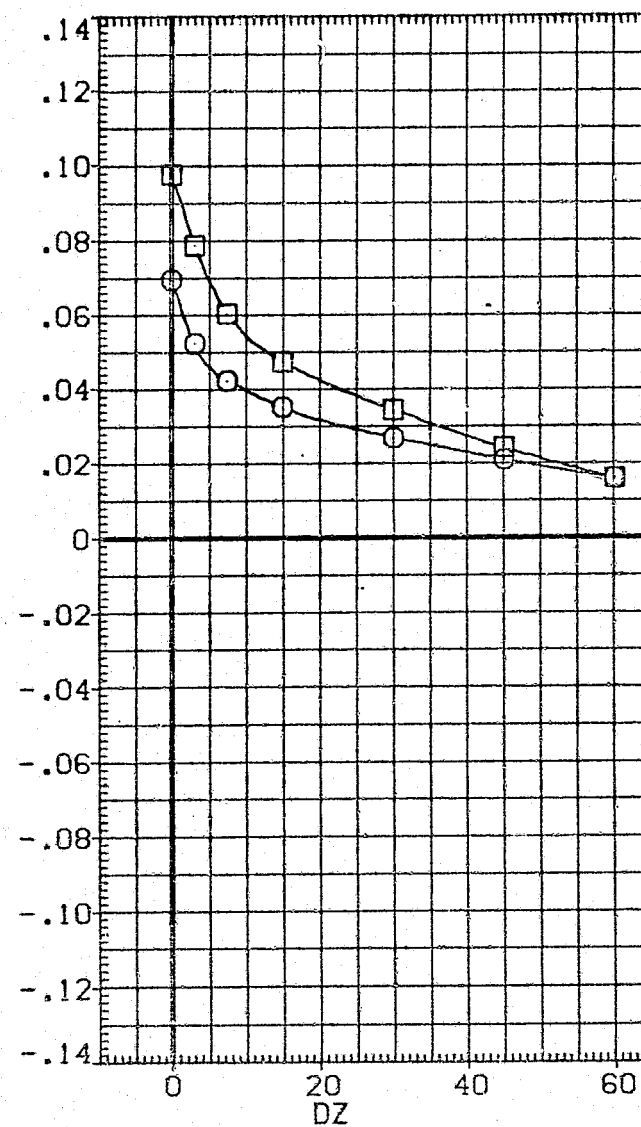
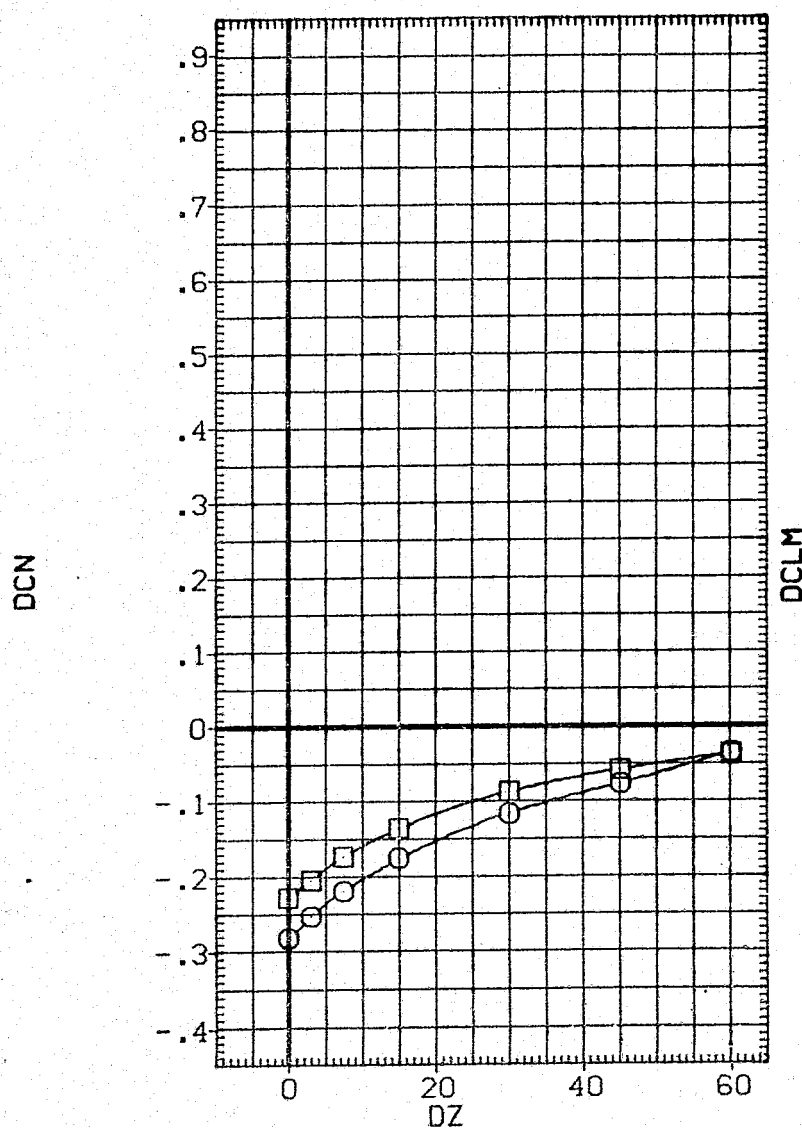


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (101 - 007)(V6N101)

SYMBOL	ALPHA0		PARAMETRIC VALUES				REFERENCE INFORMATION		
	10.000	14.000	ALPHAC	8.000	BETAC	5.000	SREF	2690.0000	50.FT.
○			ELV-1B	.000	ELV-0B	3.000	LREF	474.8100	IN.
□			ELEVON	5.000	MACH	.600	BREF	935.6800	IN.
			PHI	7.500	DX	.000	XMRP	1109.0000	IN.X0
			DY	10.000	BETA0	-5.000	YMRP	.0000	IN.Y0
							ZMRP	375.0000	IN.Z0
							SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

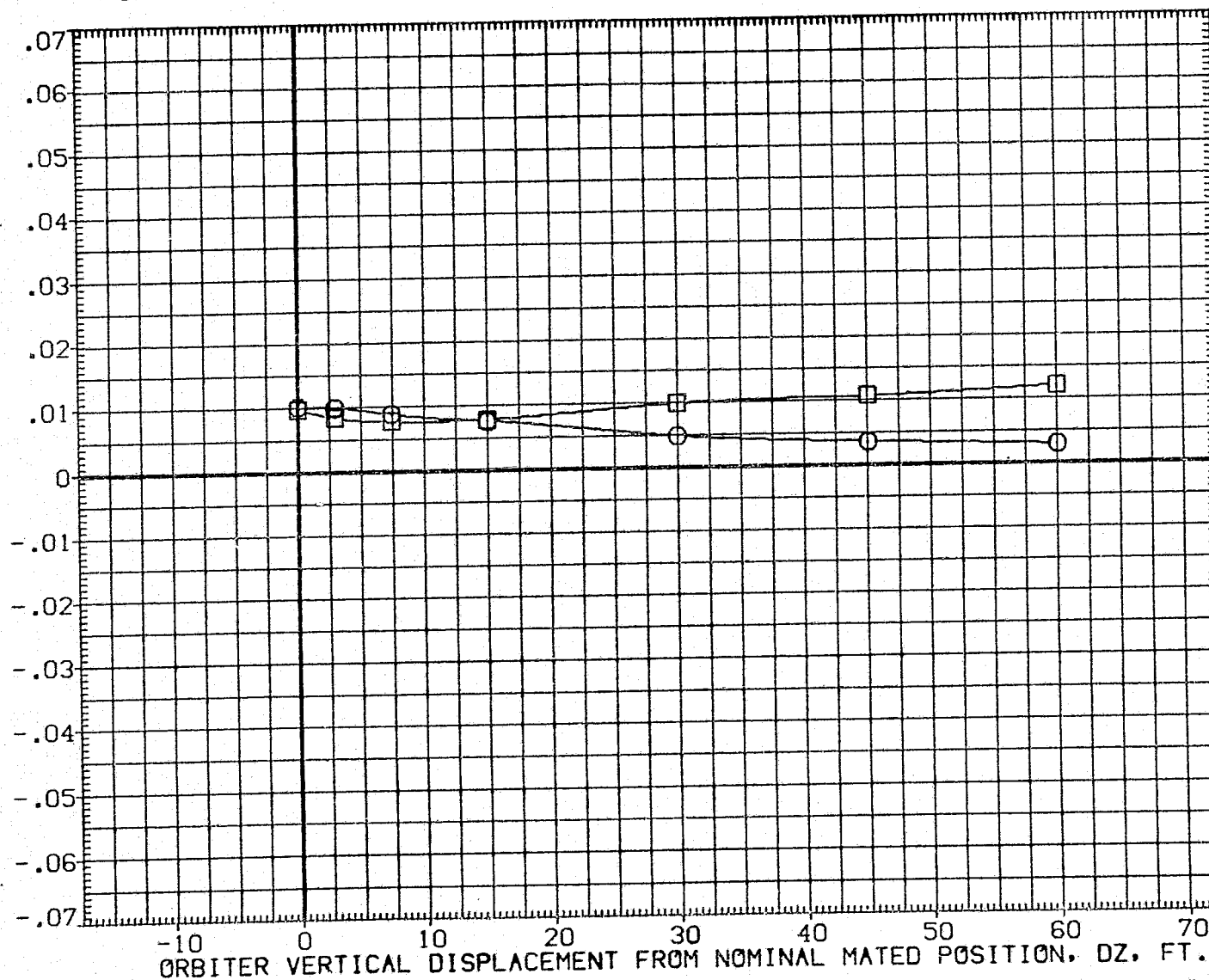


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	5.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

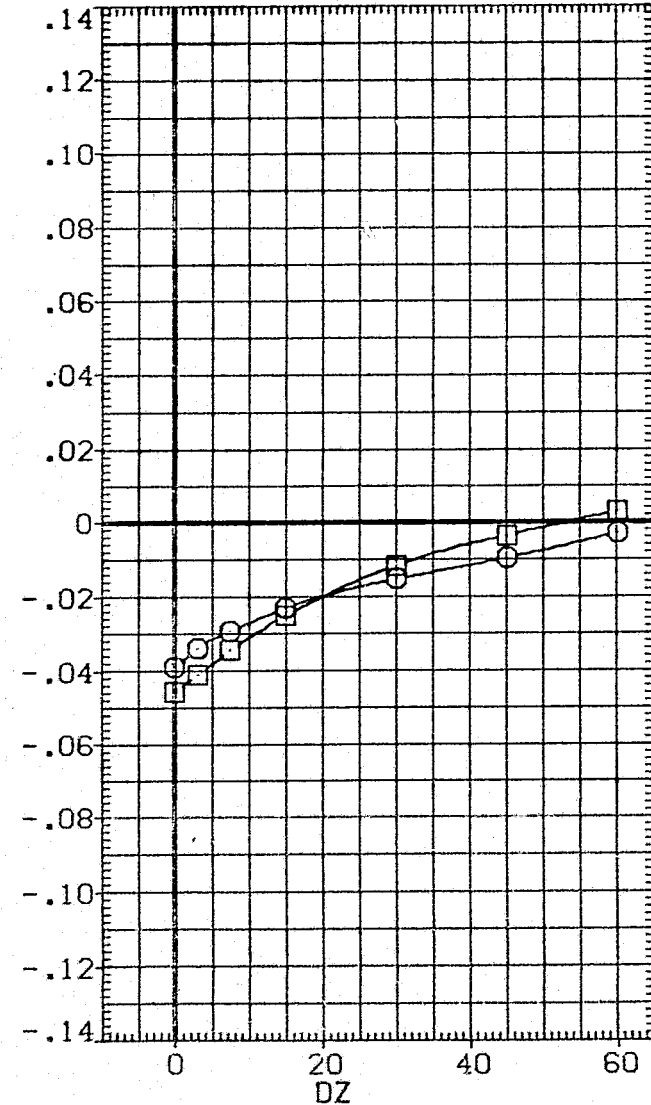
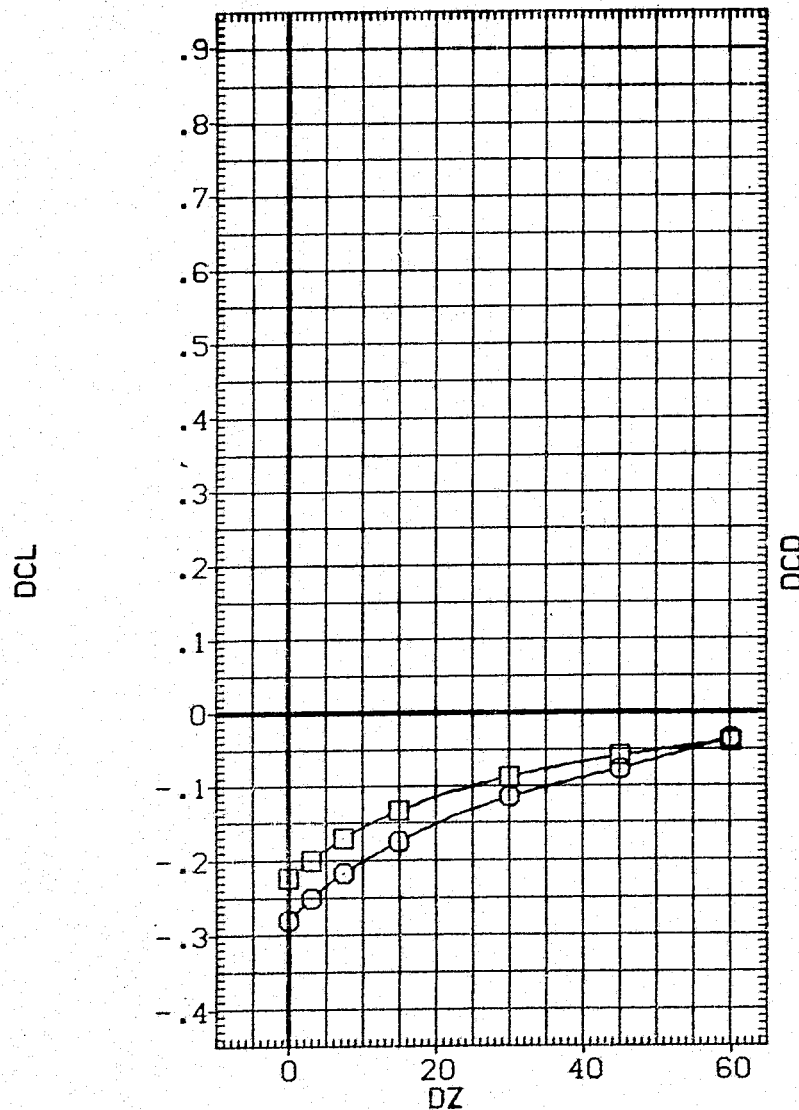


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN076)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-C8	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETAD	.000	BETAC	-5.000
		PHI	7.500	DY	.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

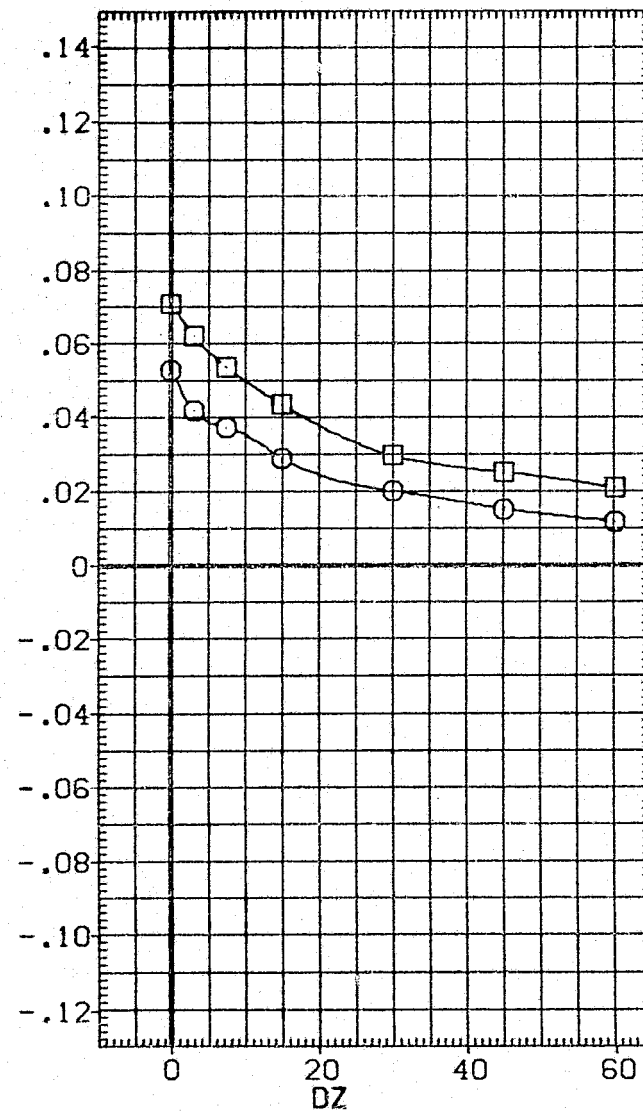
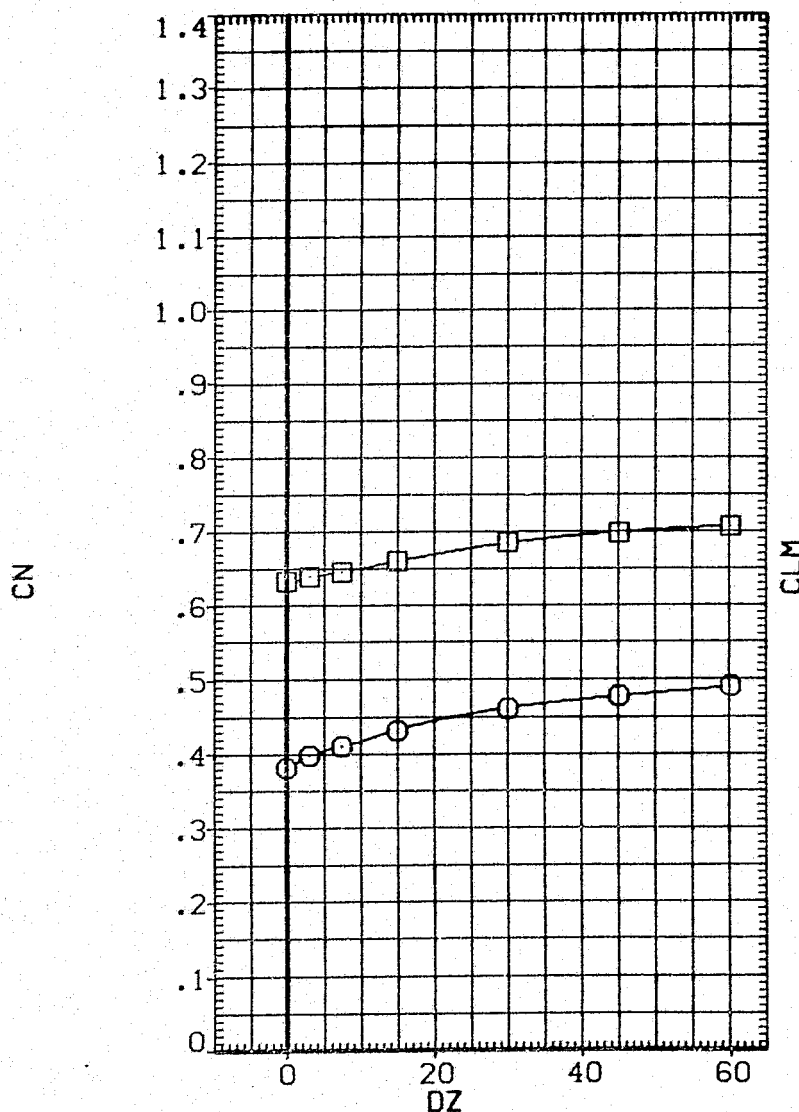


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN076)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

7.500

.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

-5.000

.000

4.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

50.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

AXIAL FORCE COEFFICIENT, CA

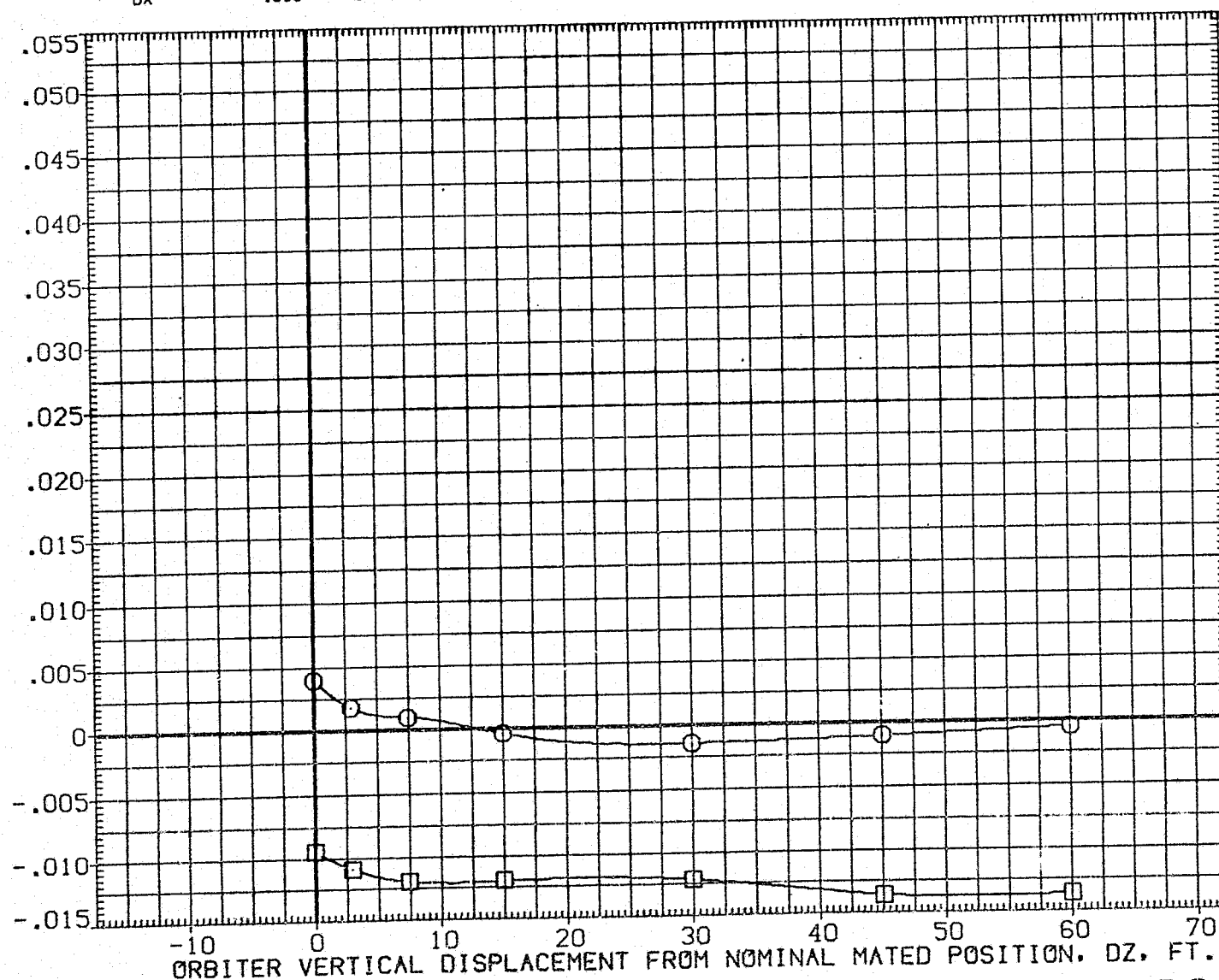


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

PAGE 1176

CA20 747/1 01 S1

ORBITER DATA(NGN076)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI 7.500 DY .000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

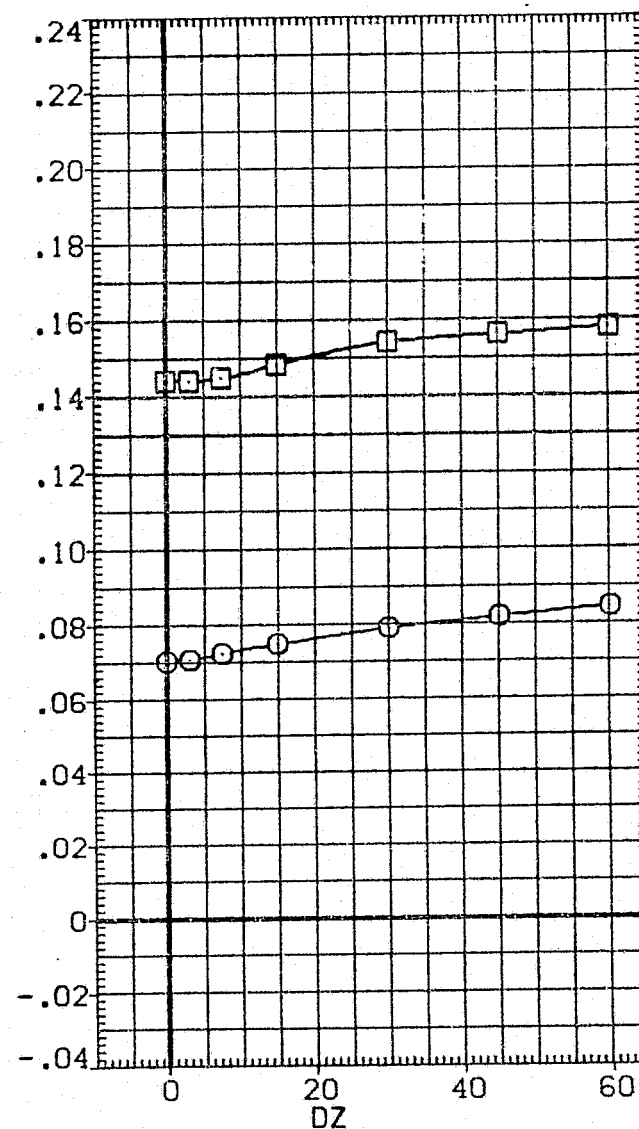
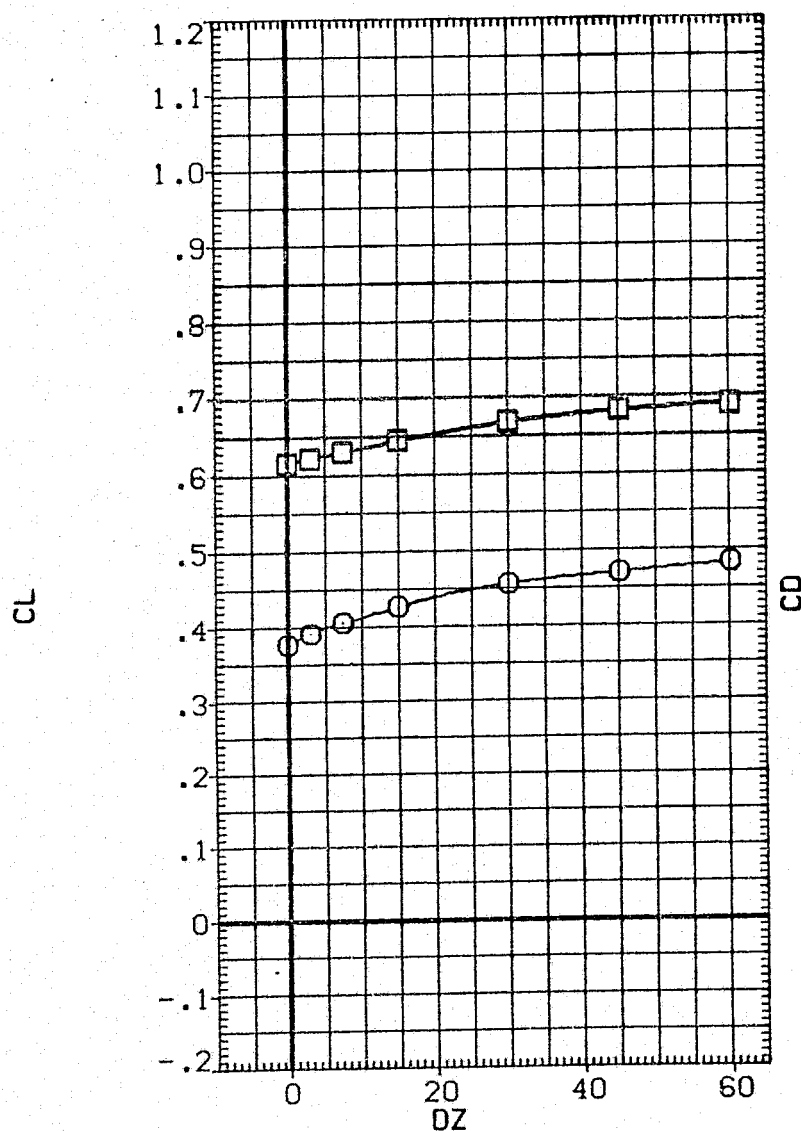


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000	ELEVON	.000	MACH	3.000
□	14.000	BETA0	5.000	BETAC	.600
		PHI	.000	DY	-5.000
		DX	7.500	ALPHAC	.000
			.000		4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

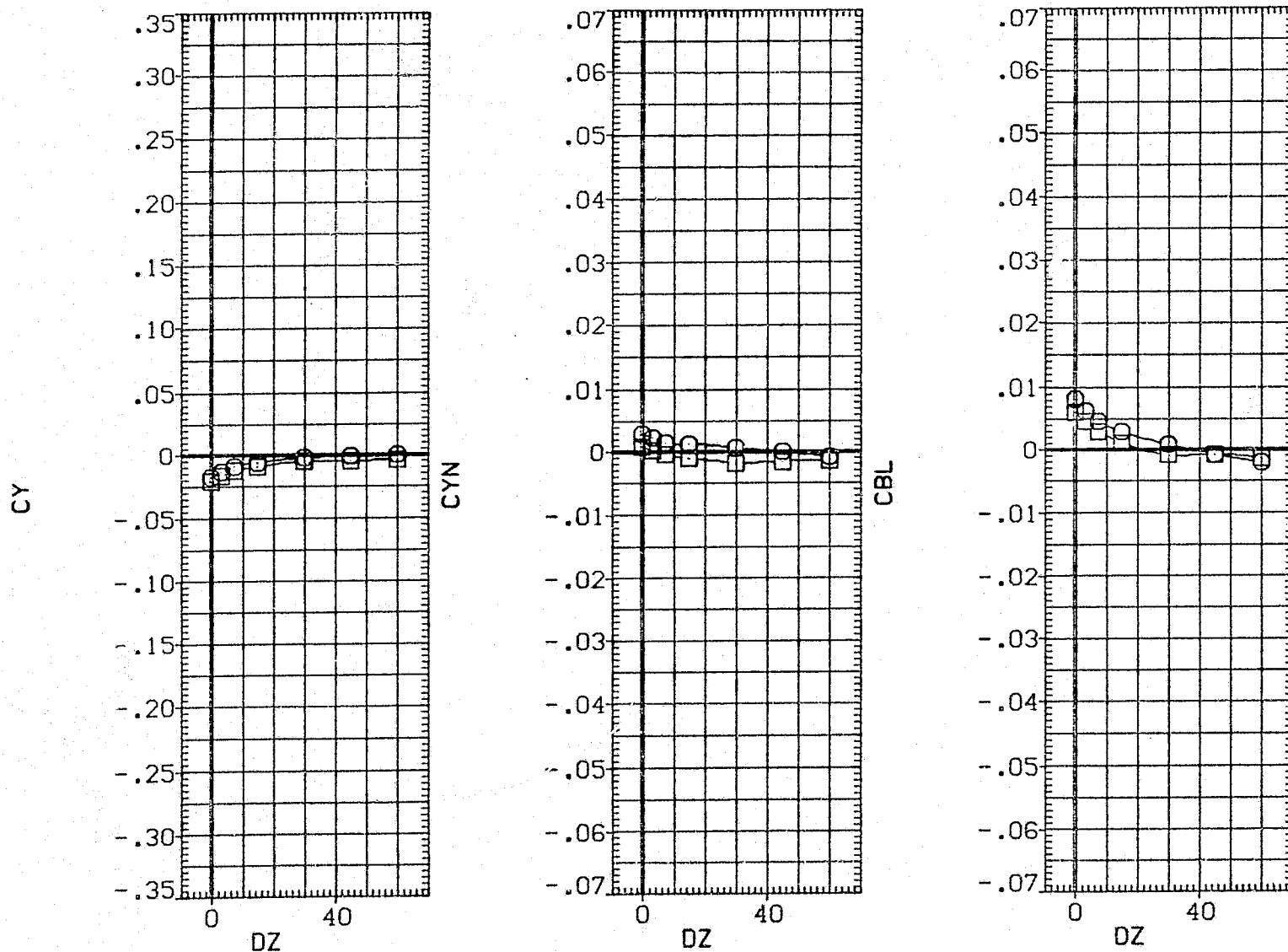


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) . D/S (076 - 010)(VGN076)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETA0 -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

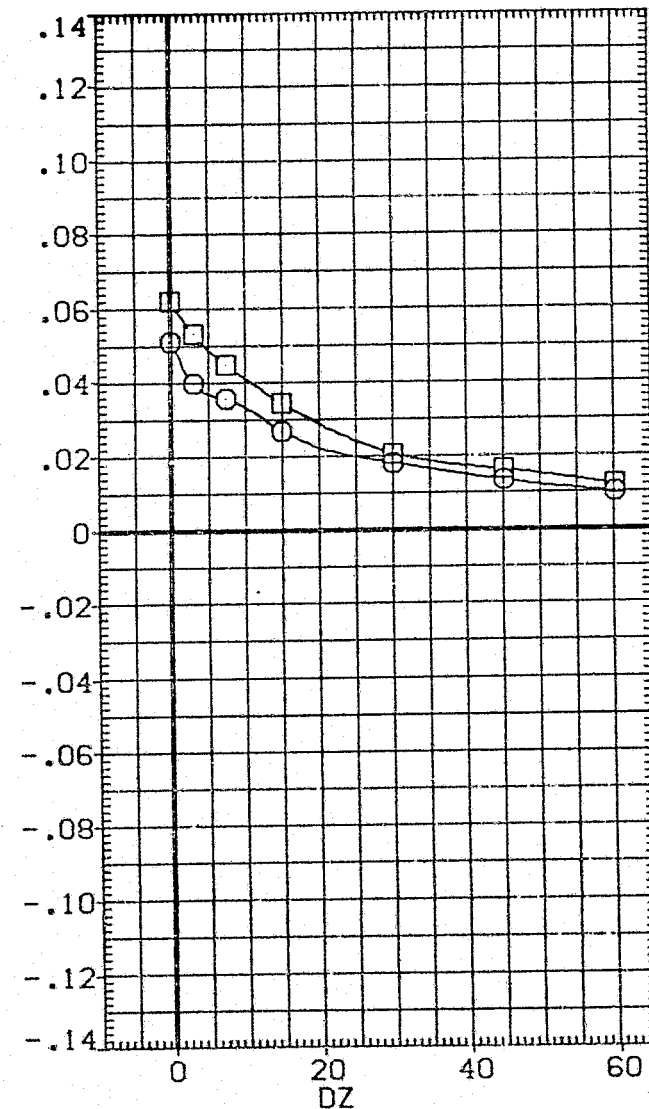
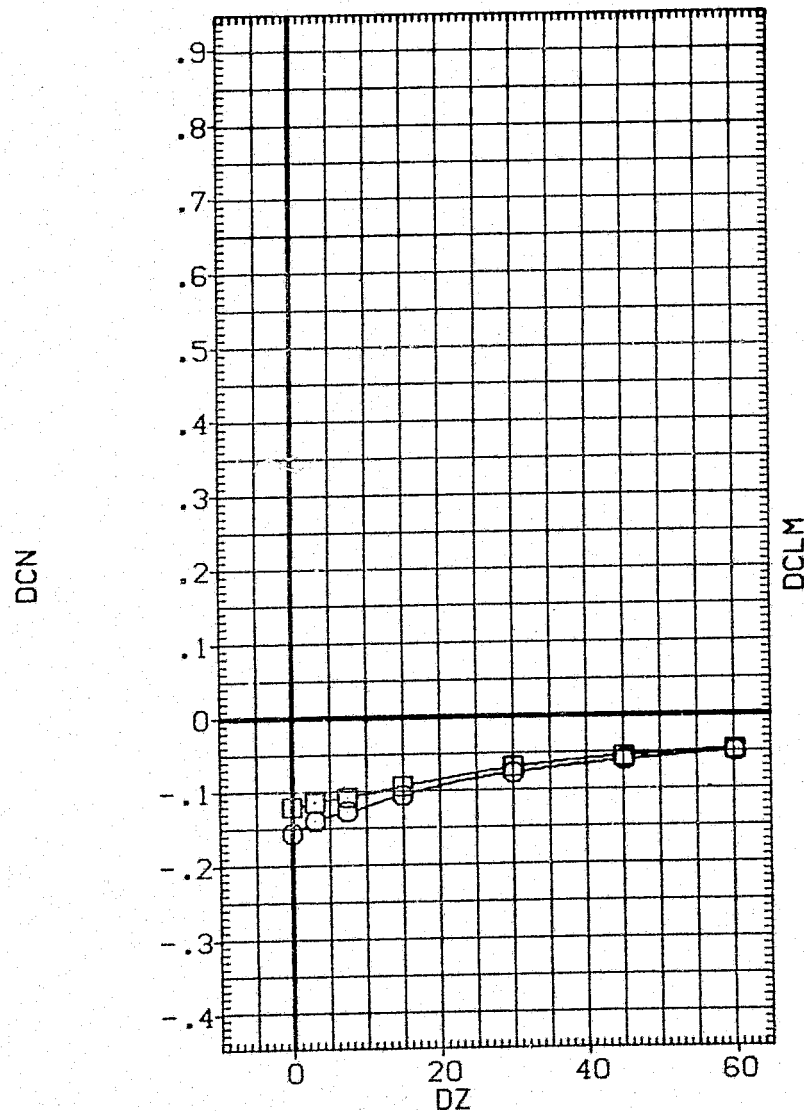


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL



ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

BETAC

-5.000

ELV-OB

3.000

MACH

.600

DX

.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000

50.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

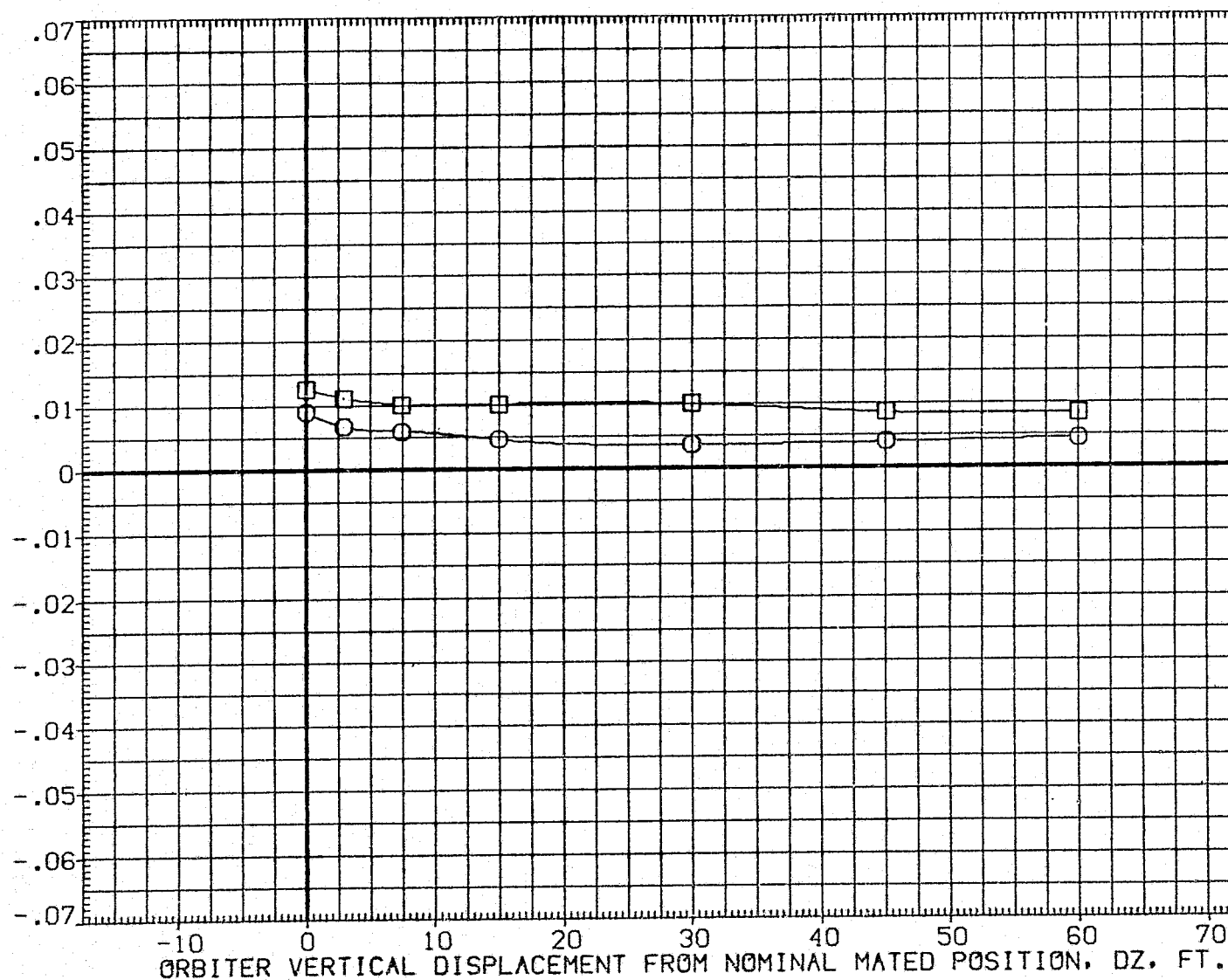


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (076 - 010) (VGN076)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

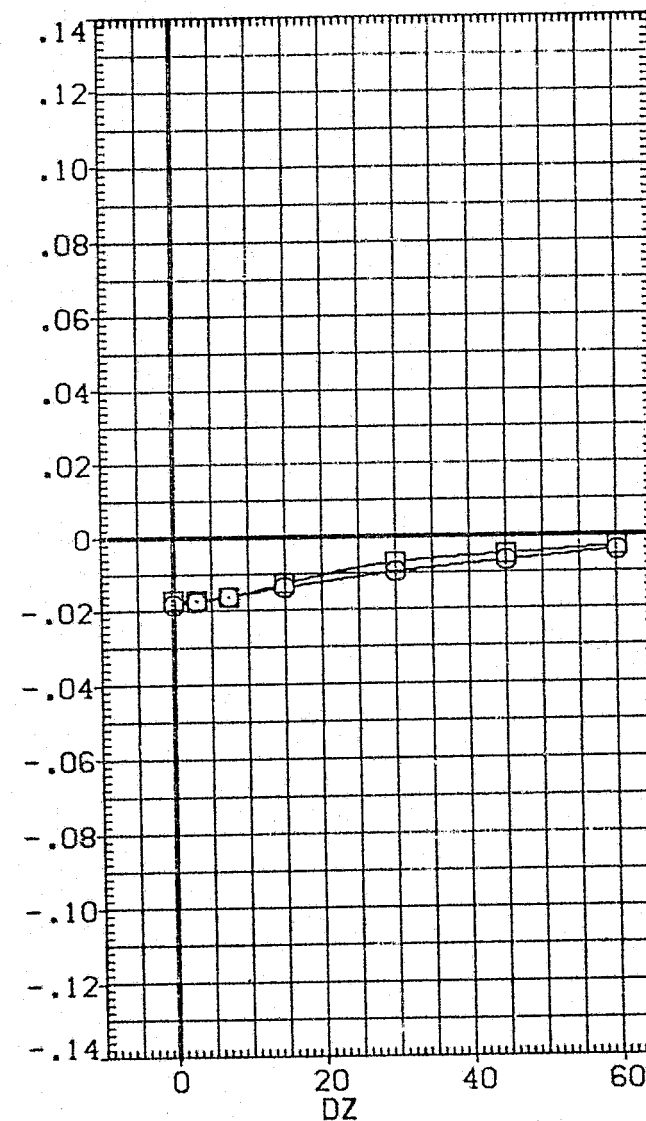
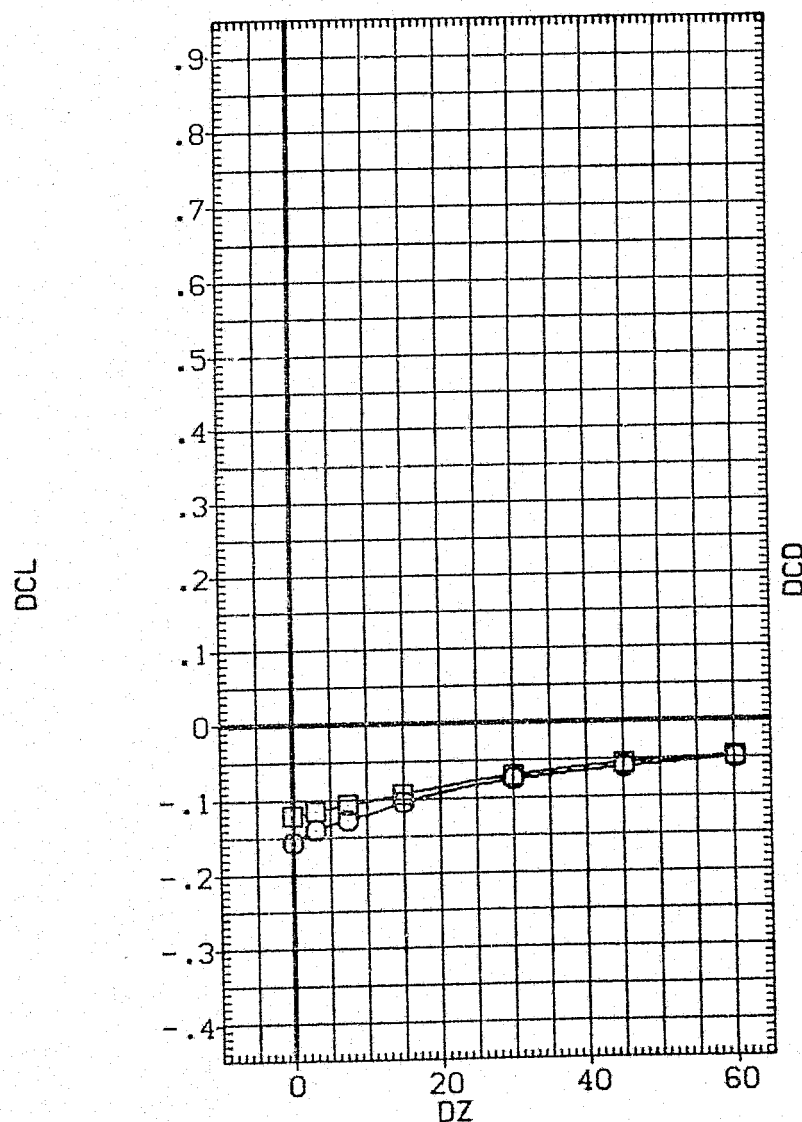


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

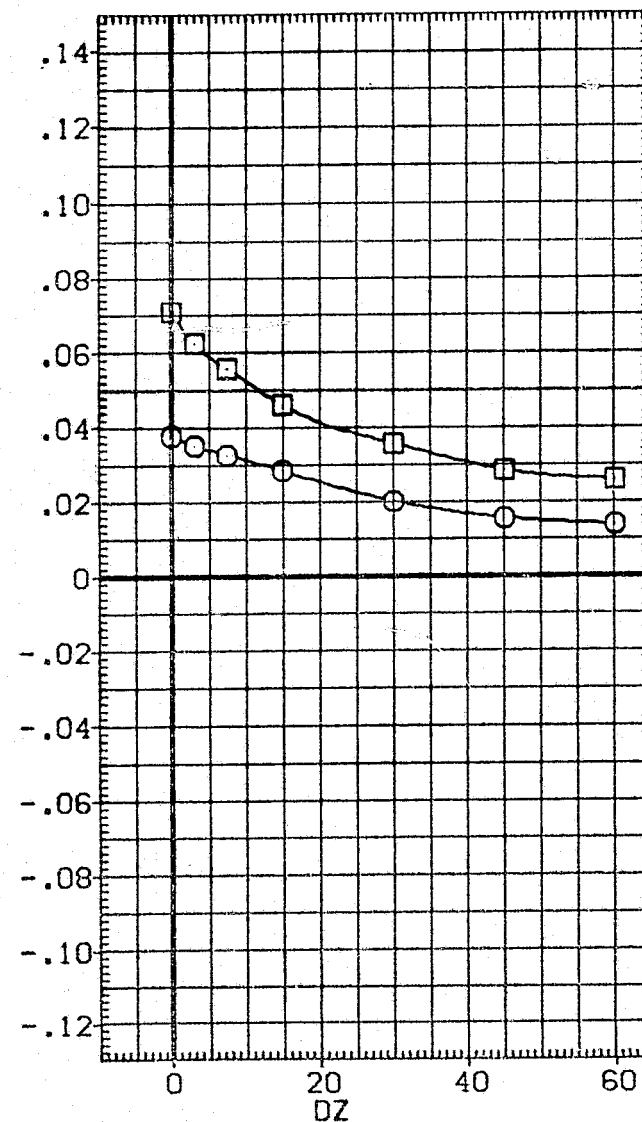
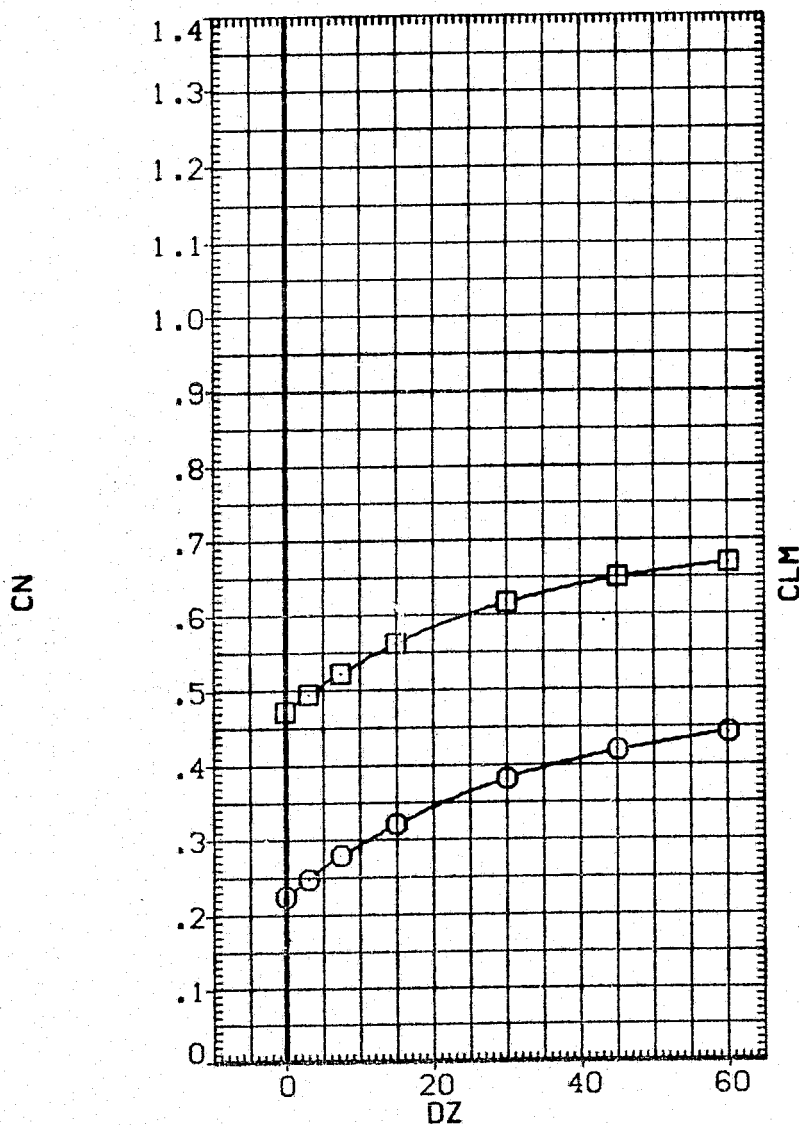


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN078)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	.000	MACH	3.000
□	14.000	5.000	BETAC	.600
		.000	BETAC	-5.000
		7.500	DY	.000
		.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

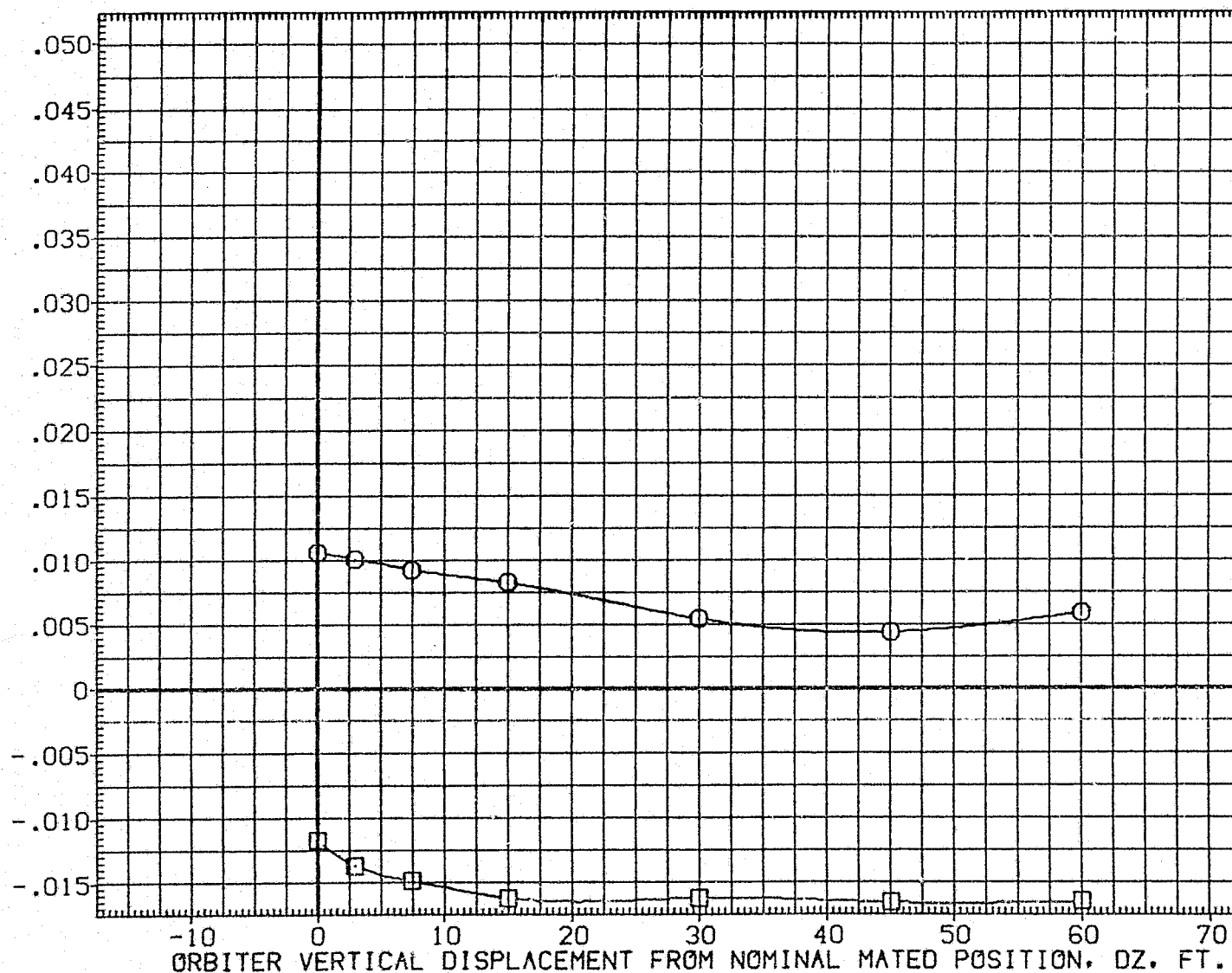


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

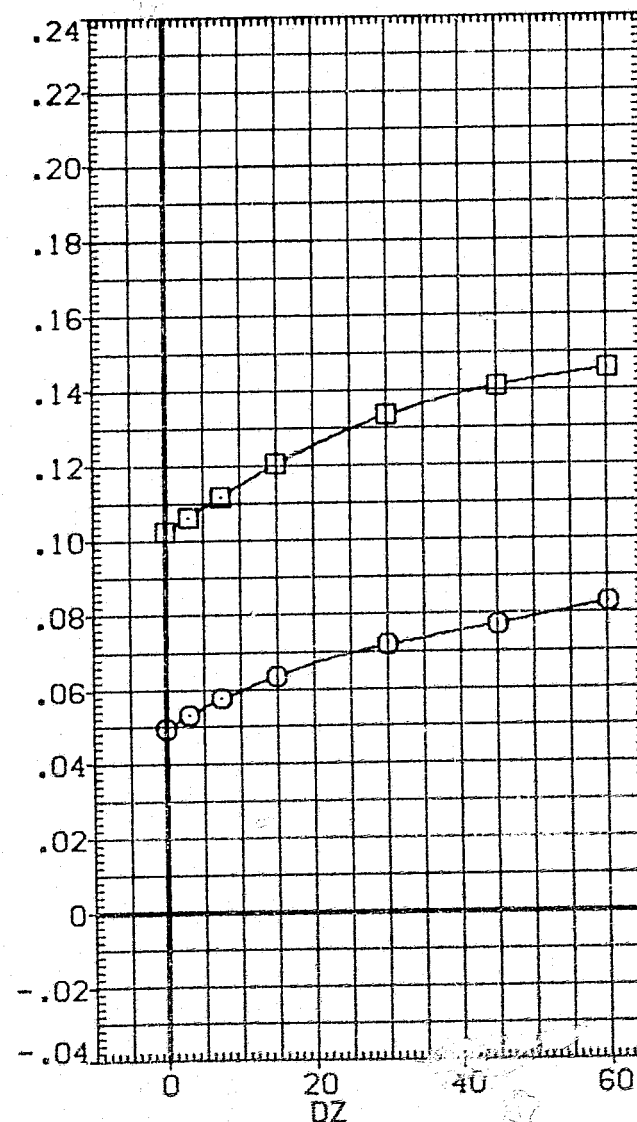
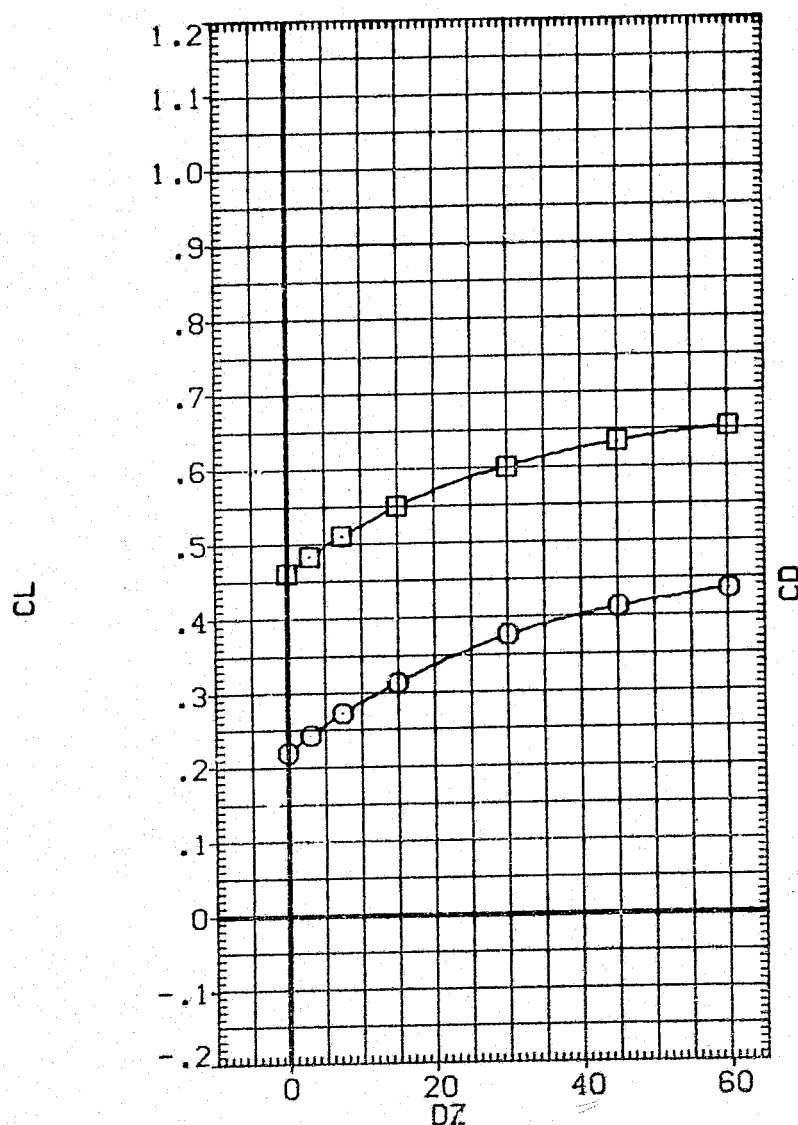


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN078)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB
○	10.000	.000	ELV-OB	3.000
□	14.000	5.000	HACH	.600
	BETA0	.000	BETAC	-5.000
	PHI	7.500	DY	.000
	DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

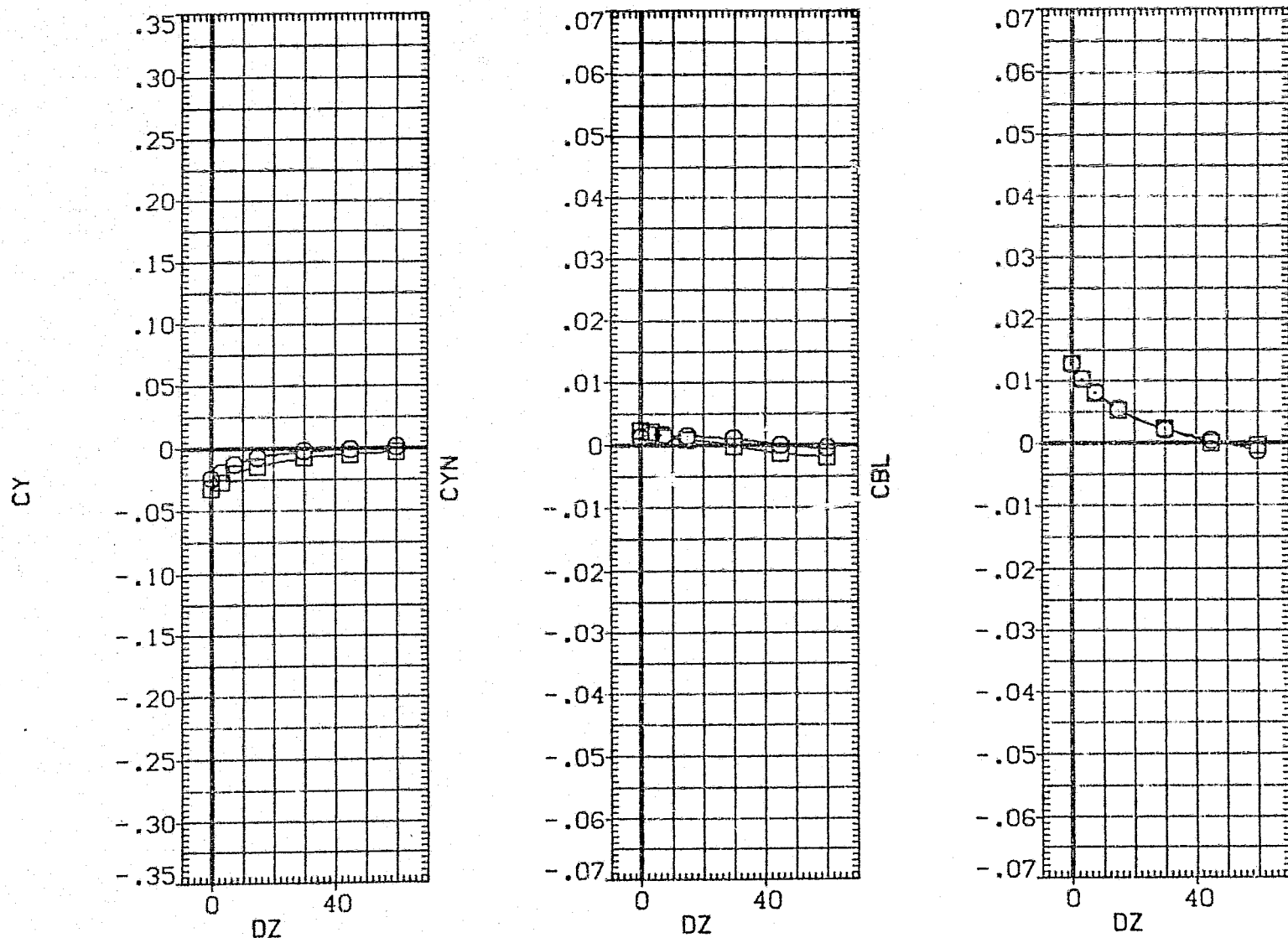


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

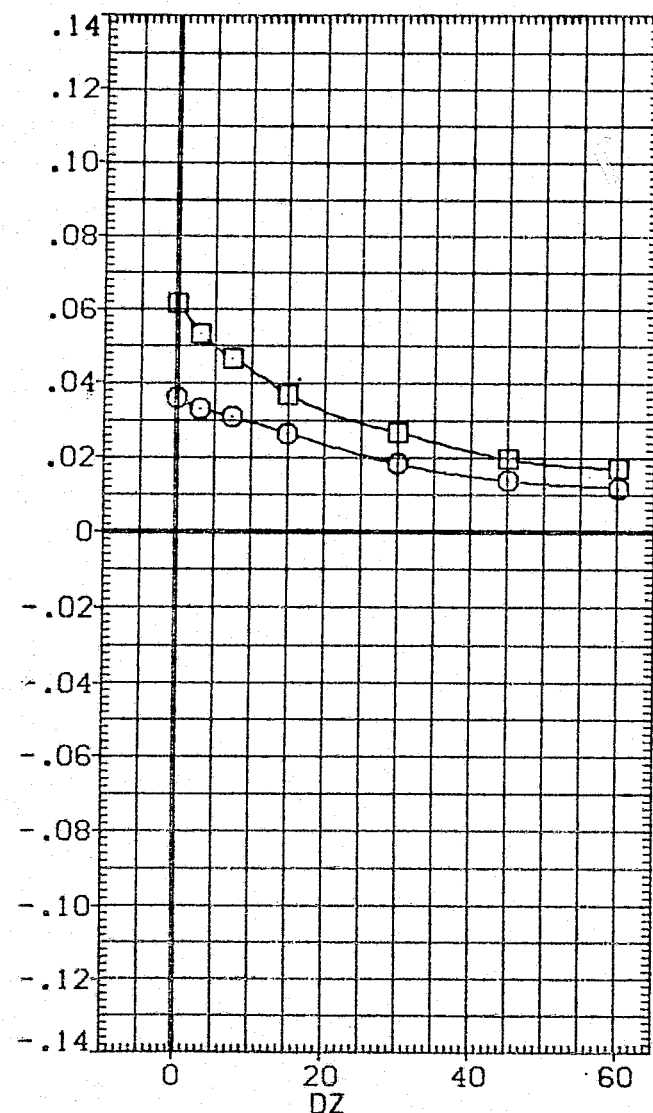
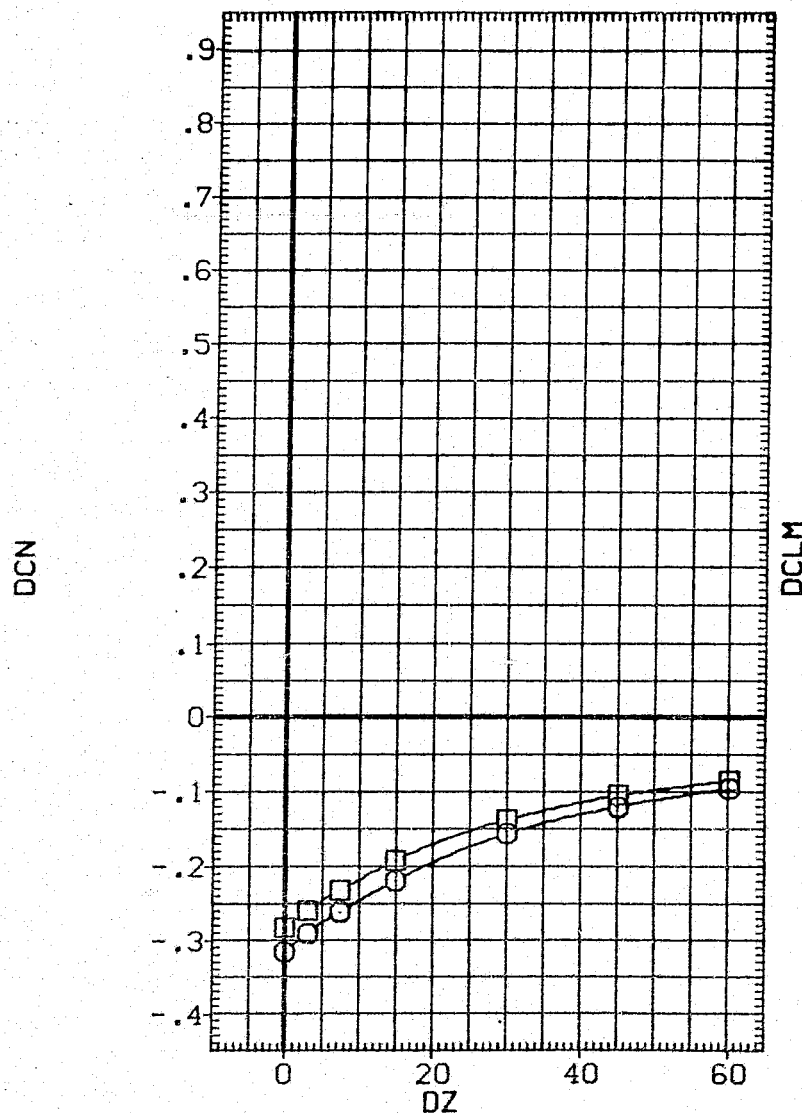


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (078 - 010)(VGN078)

SYMBOL
○
□

ALPHA0
10.000
14.000

ALPHA0
ELV-18
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000 BETAC -5.000
.000 ELV-08 3.000
5.000 MACH .600
7.500 DX .000
.000 BETA0 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

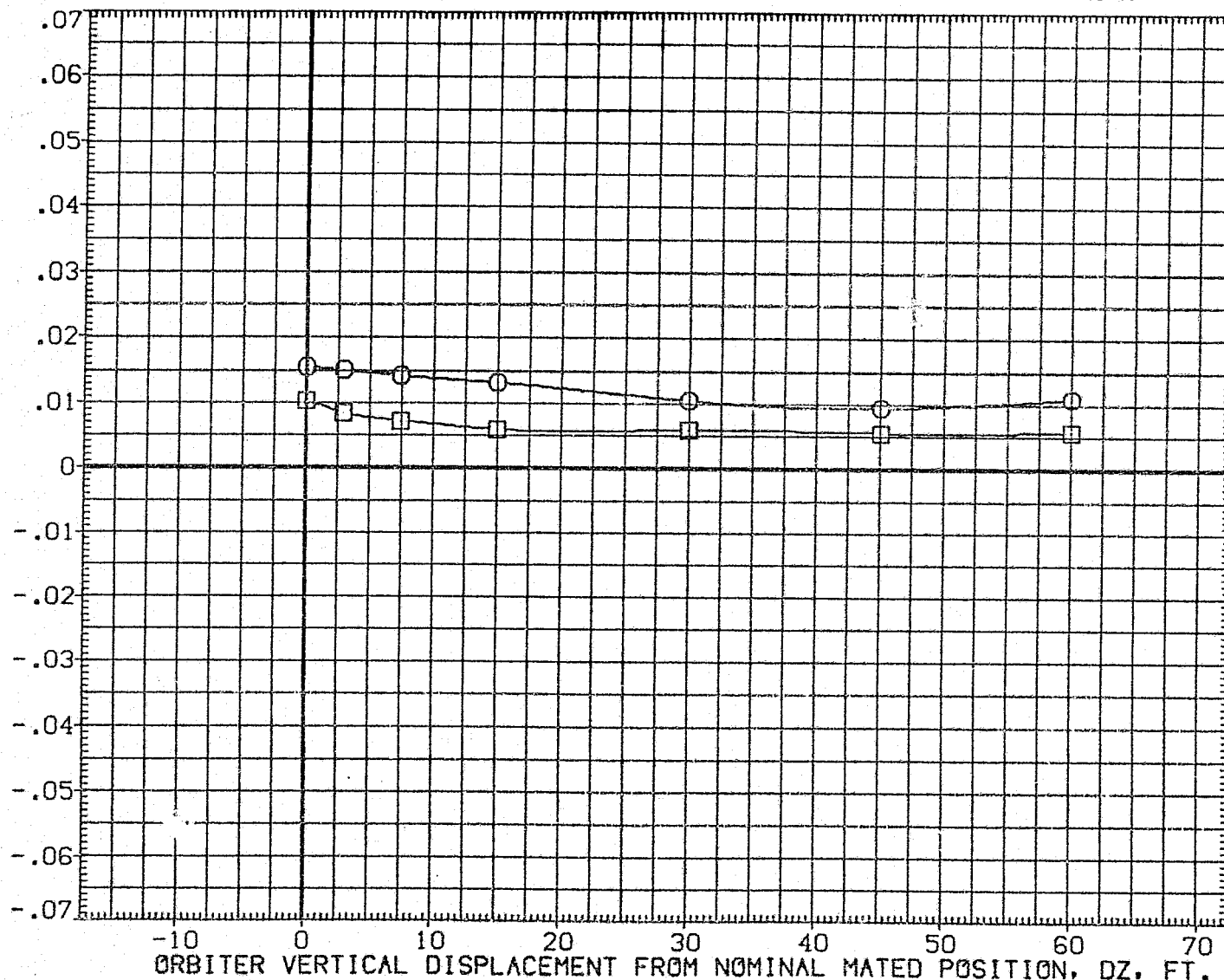


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL



ALPHA0

10.000

14.000

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	-5.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	7.500	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

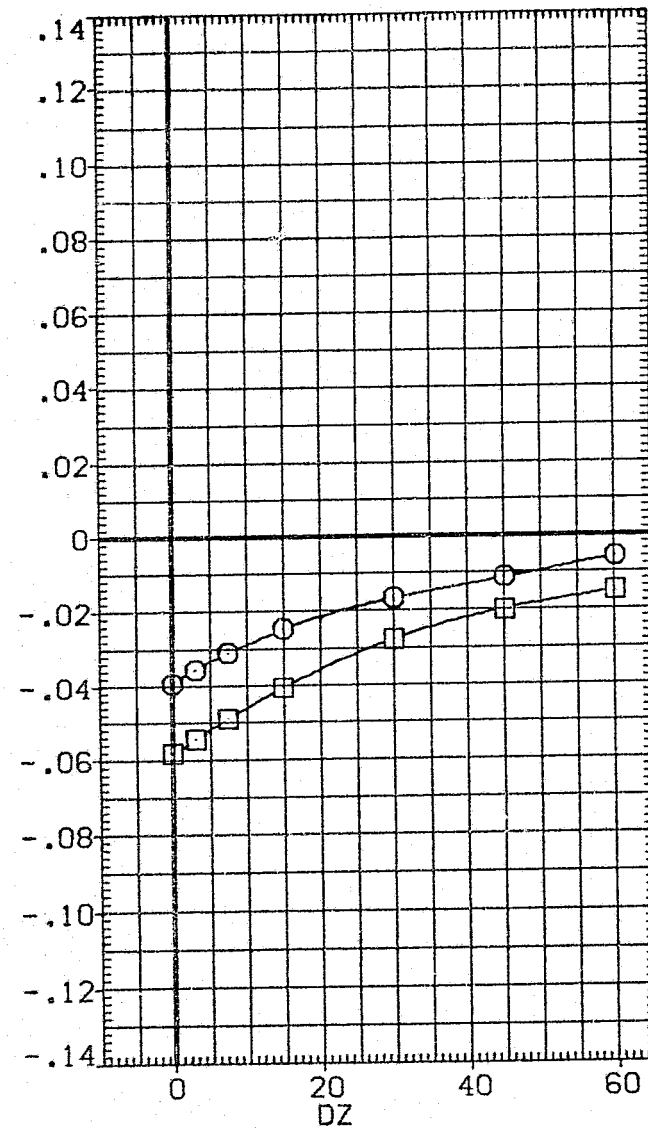
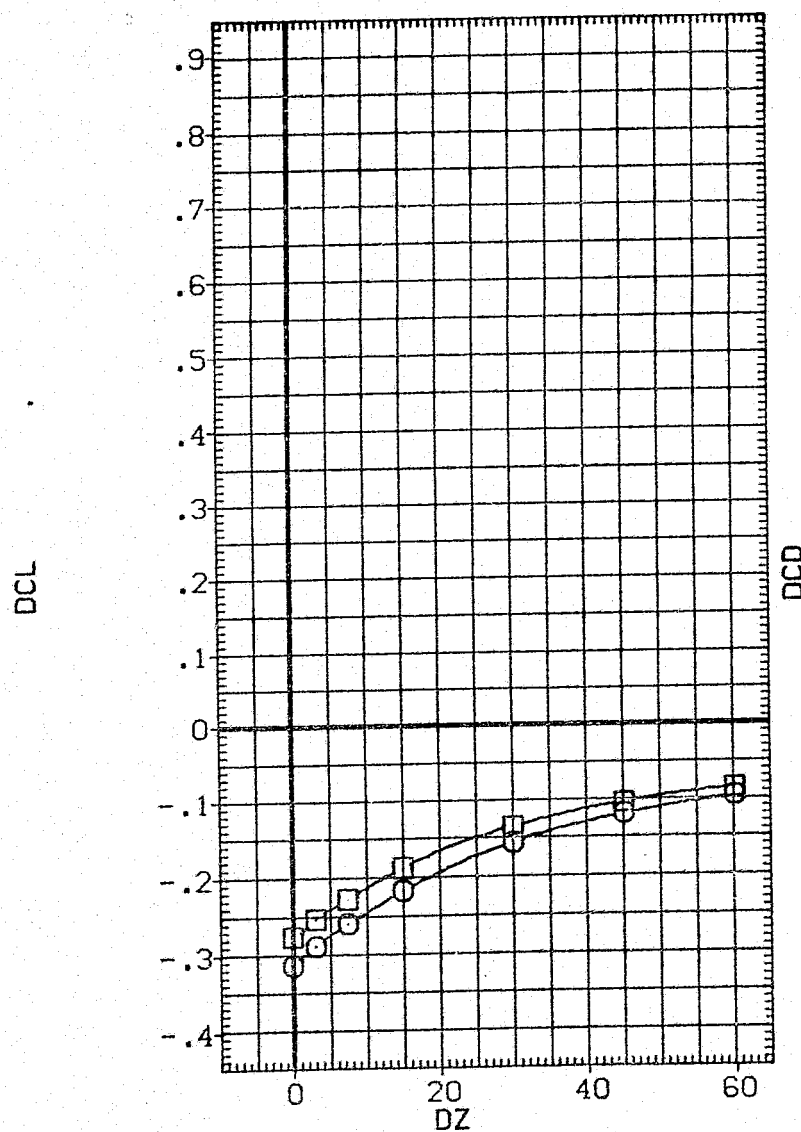


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN077)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

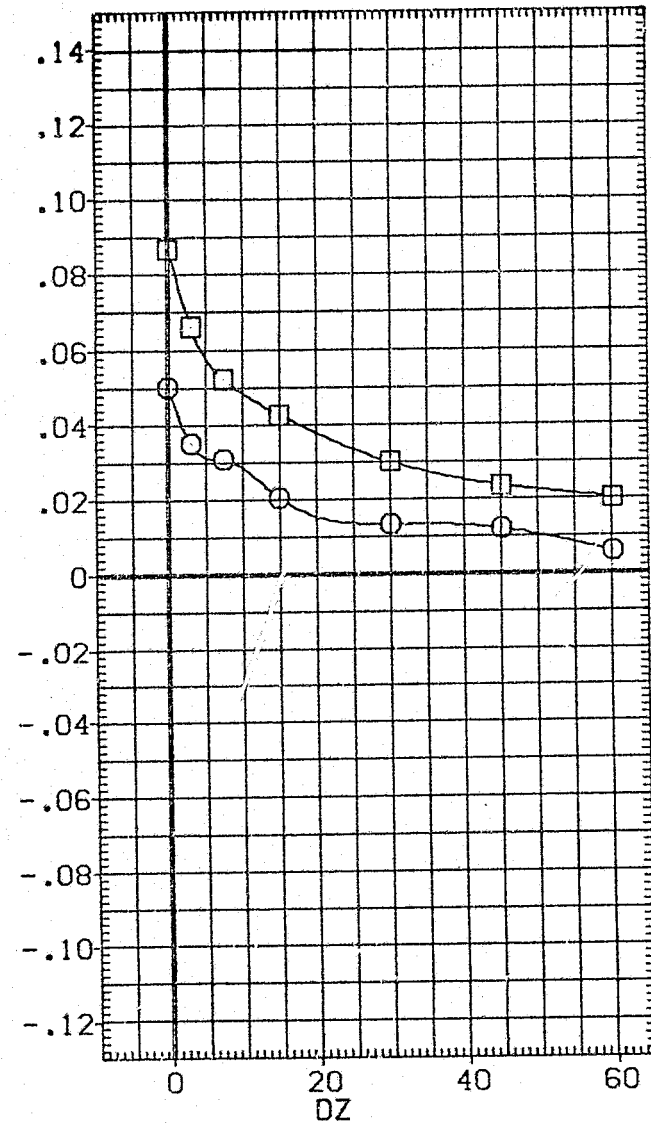
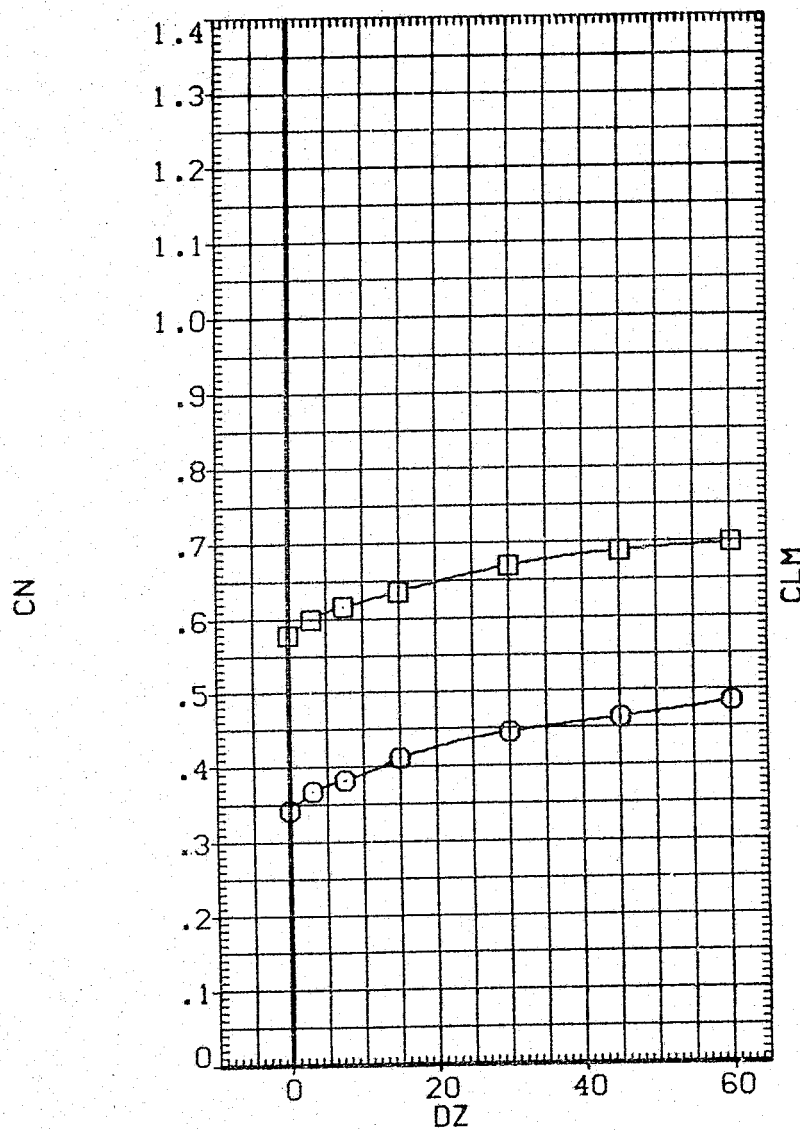


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

7.500

10.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

-5.000

.000

4.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

AXIAL FORCE COEFFICIENT, CA

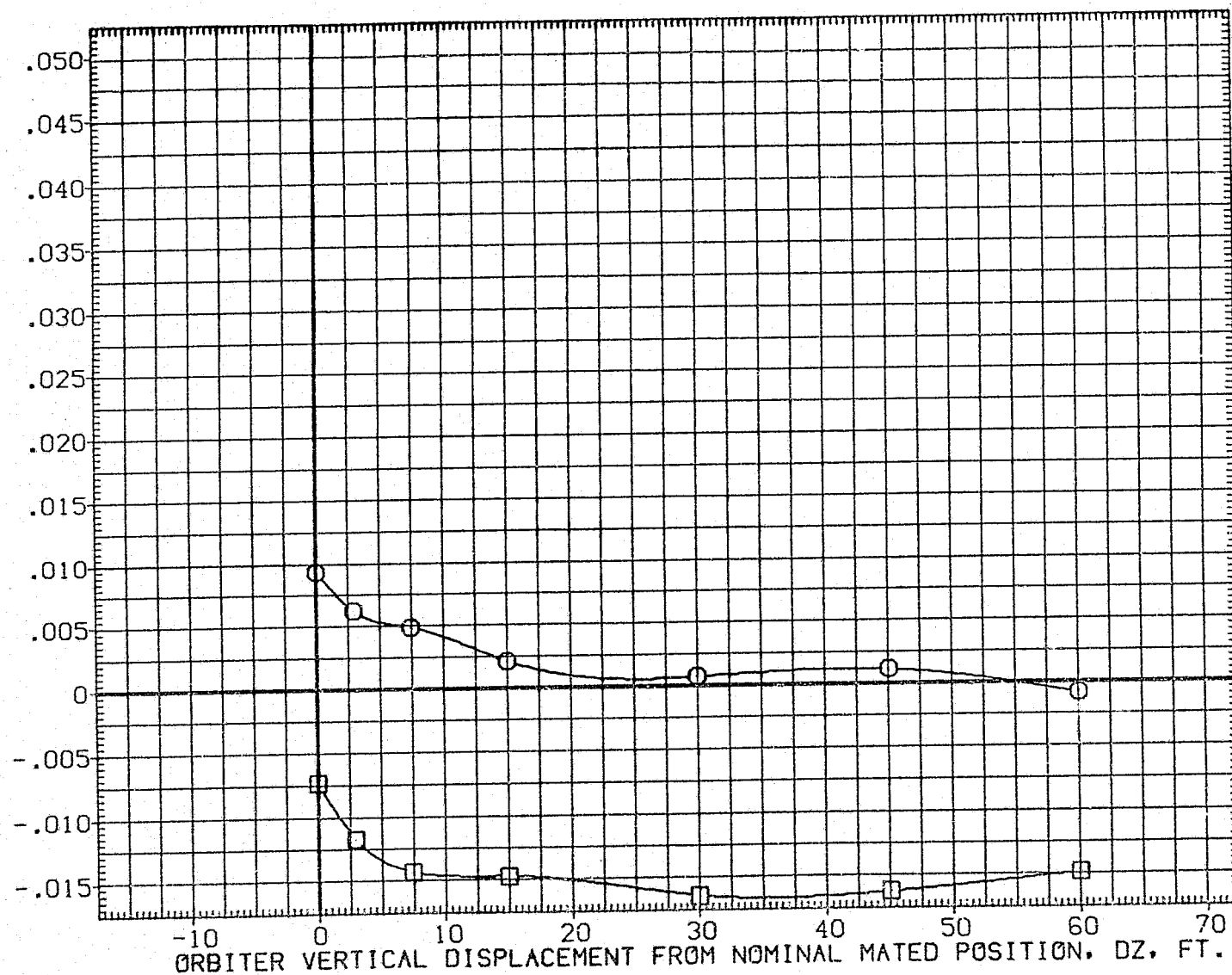


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN077)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	3.000
□	14.000	ELEV0N	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

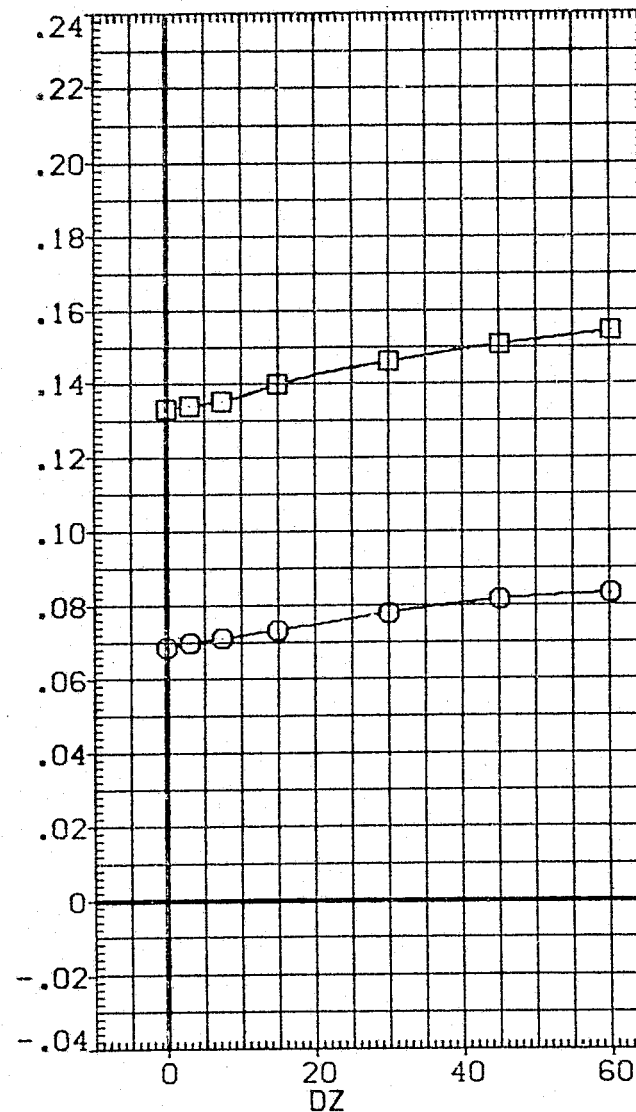
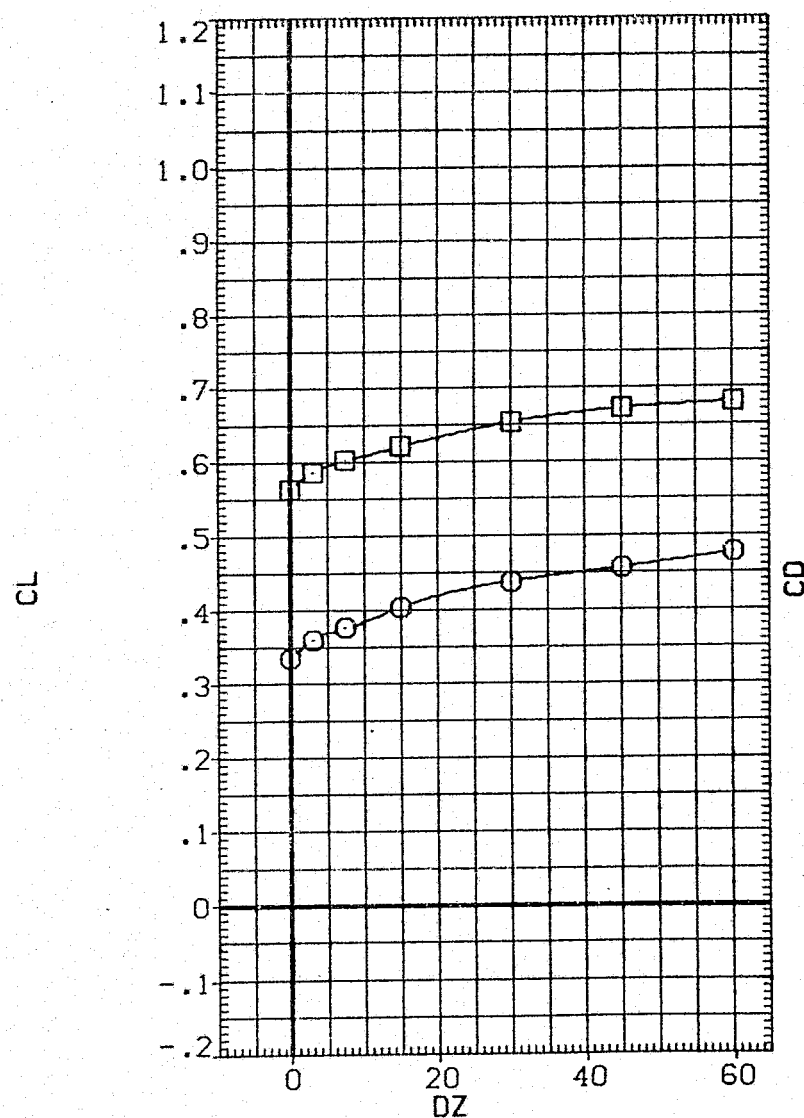


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN077)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB
○	10.000	.000		3.000
□	14.000	ELEVON	5.000	MACH
		BETA0	.000	BETAC
		PHI	7.500	DY
		DX	10.000	ALPHAC
				4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.8800	IN.
XMRF	1109.0000	IN.XC
YMRF	.0000	IN.YC
ZMRF	375.0000	IN.ZC
SCALE	.0300	

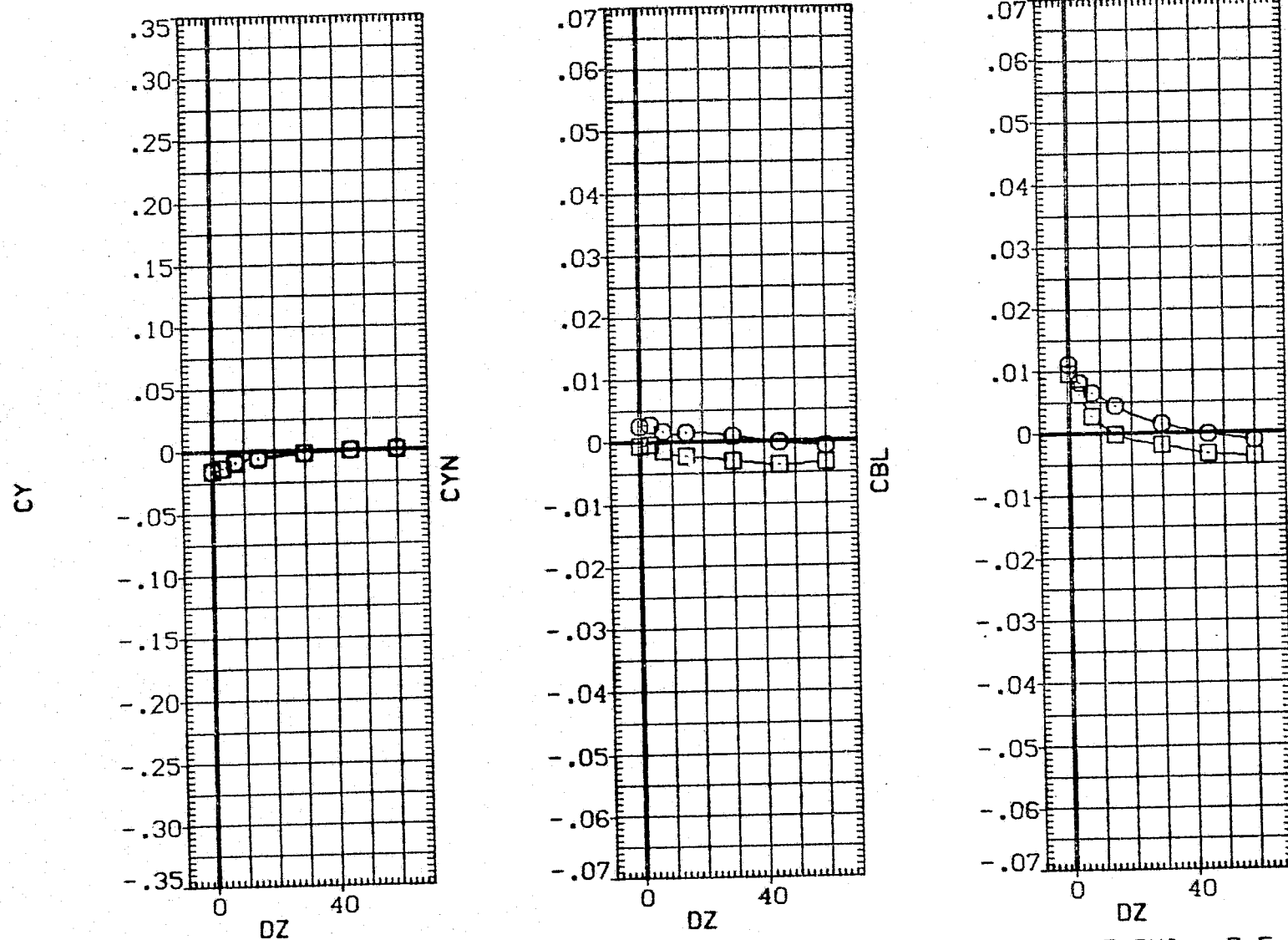


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (077 - 010)(VGN077)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

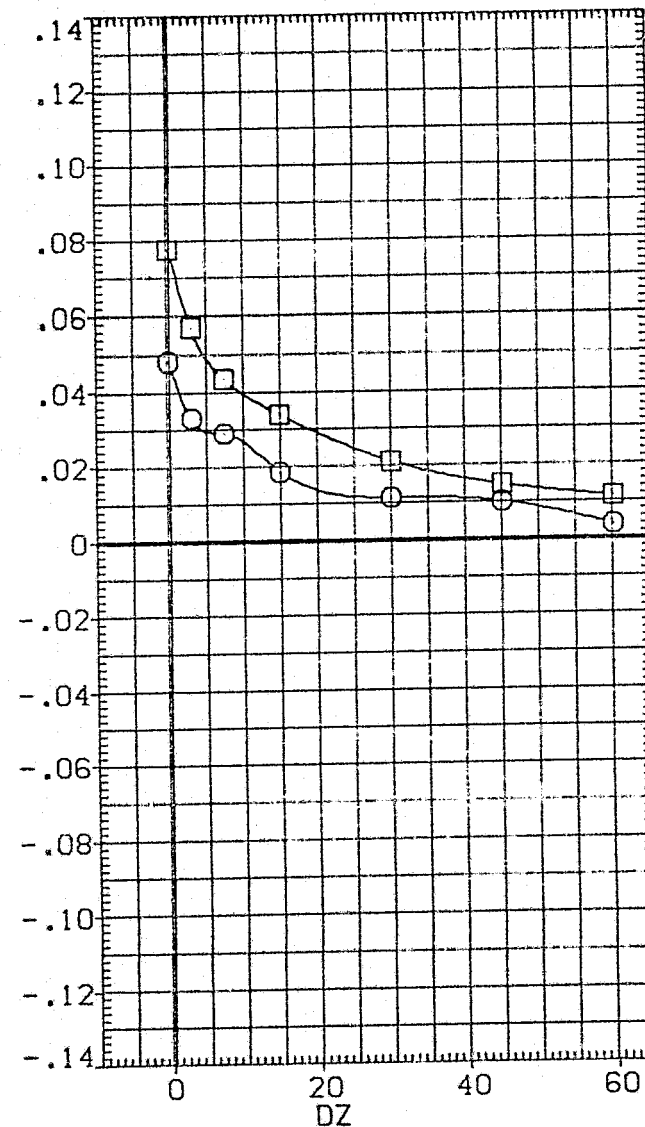
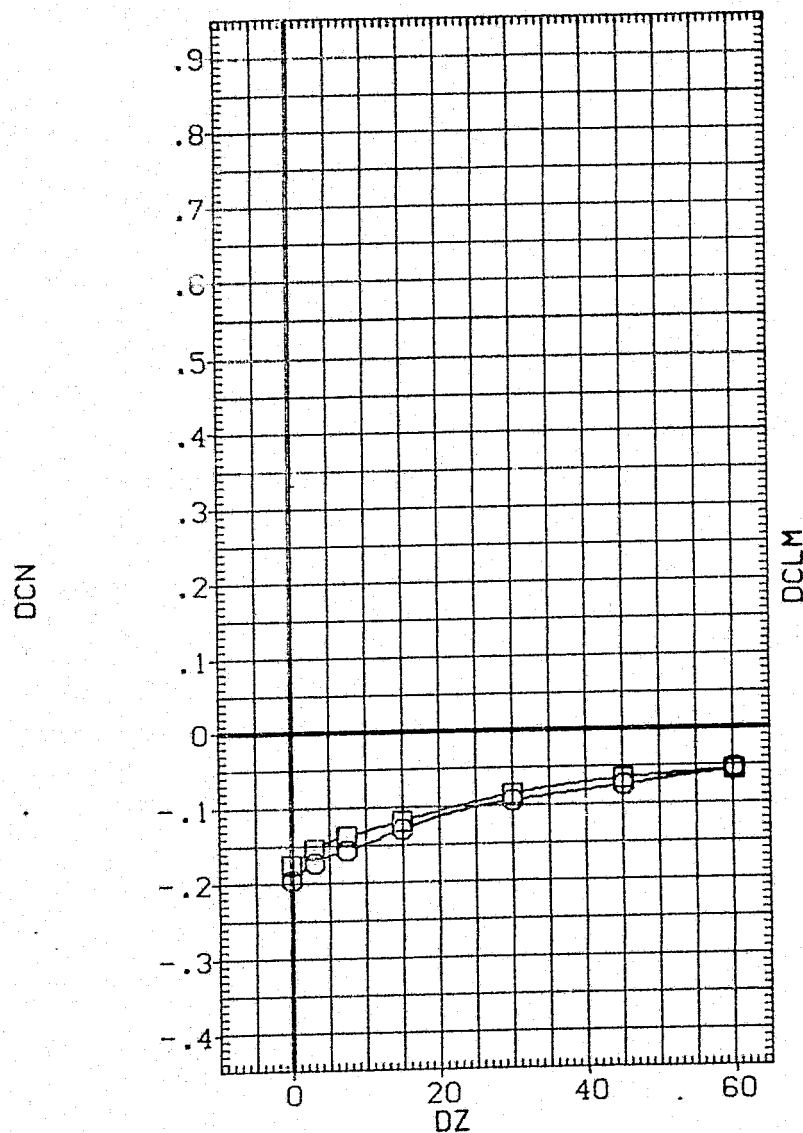


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC	-5.000
□	10.000	ELV-1B	.000	ELV-OB	3.000
○	14.000	ELEVON	5.000	MACH	.600
		PHI	7.500	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	IN. FT.
LREF	474.8109	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

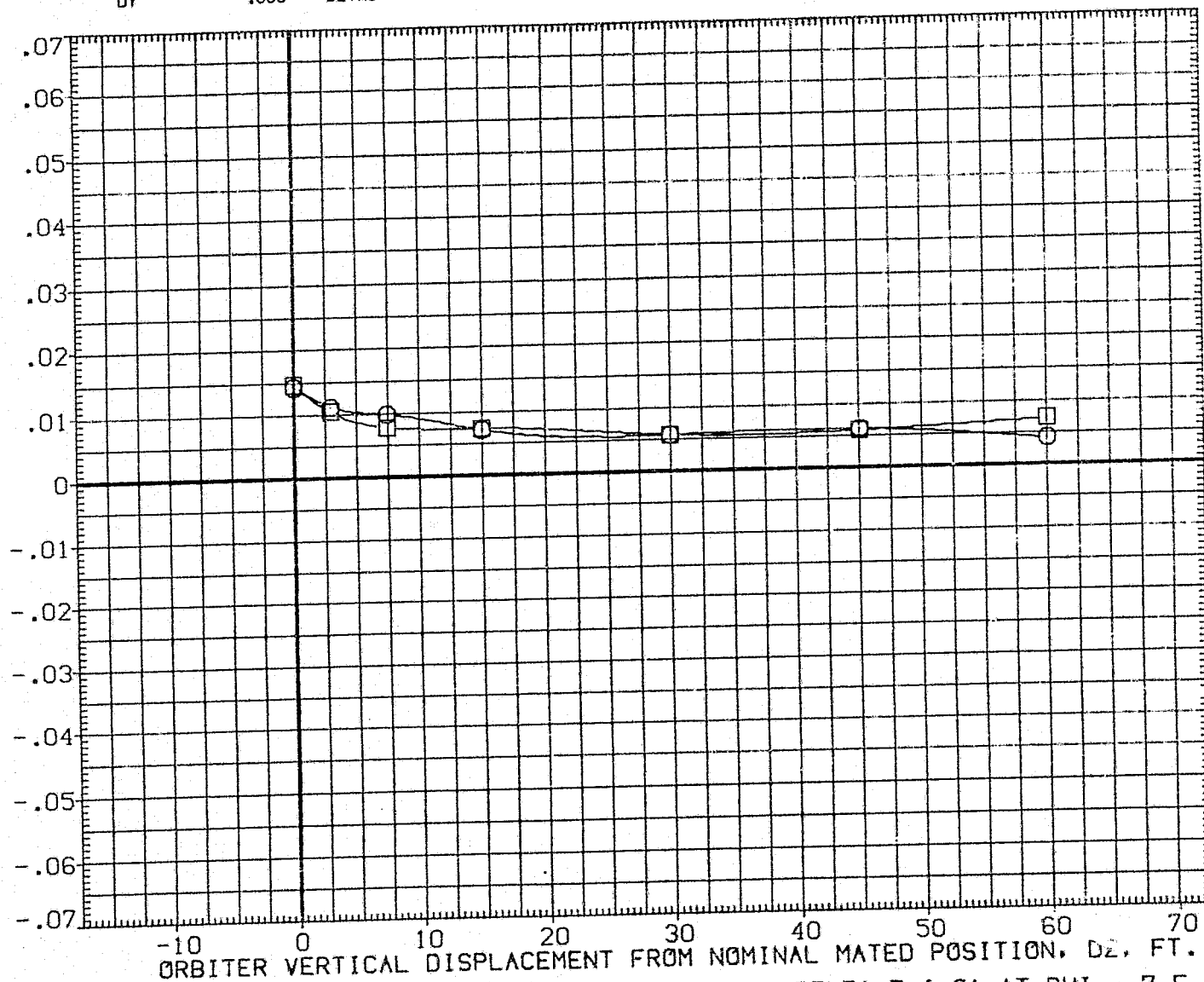


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (077 - 010)(VGN077)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
YMRP	1109.0000	IN.X0
ZMRP	.0000	IN.Y0
SCALE	375.0000	IN.Z0
	.0300	

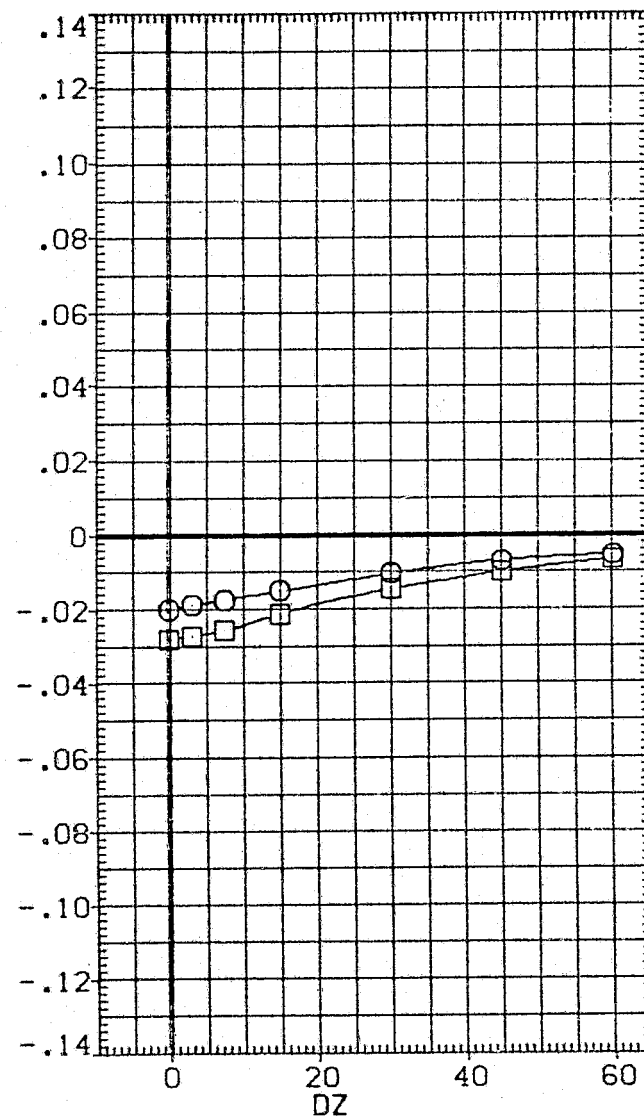
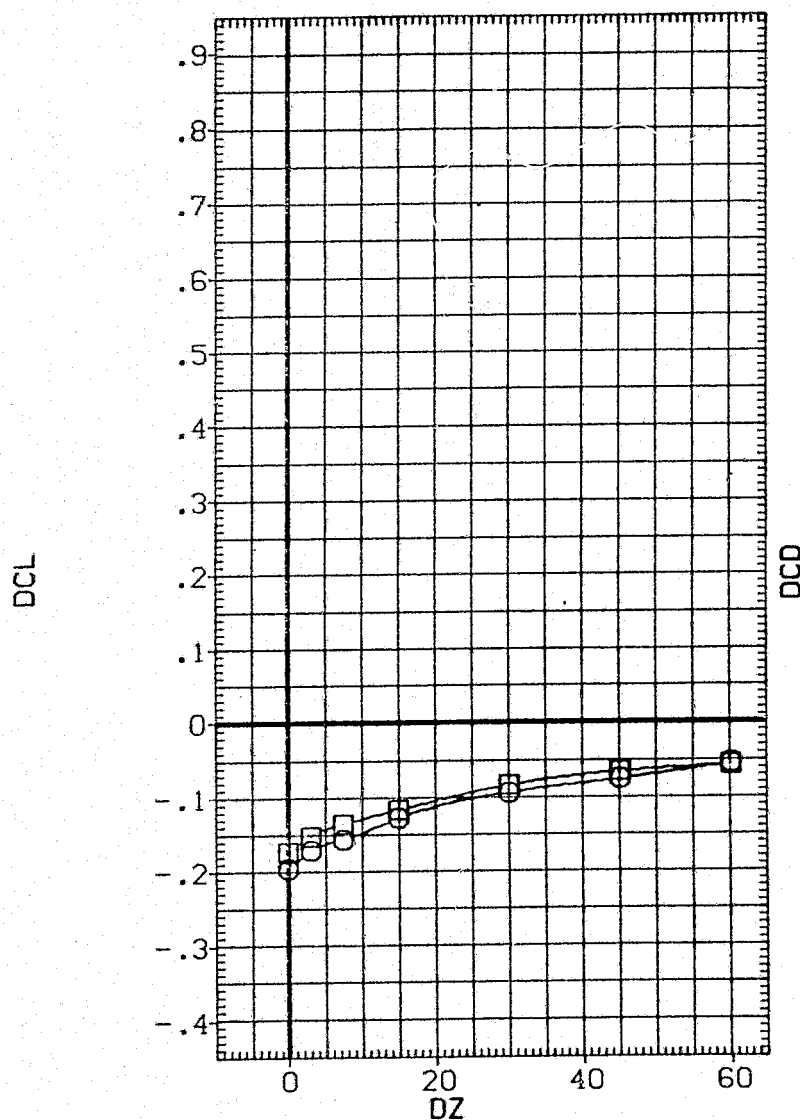


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	3.000
○	10.000	ELEVON	.000	MACH	.600
□	14.000	BETA0	5.000	BETAC	-5.000
		PHI	.000	DY	.000
		DX	7.500	ALPHAC	8.000
			10.000		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.3000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

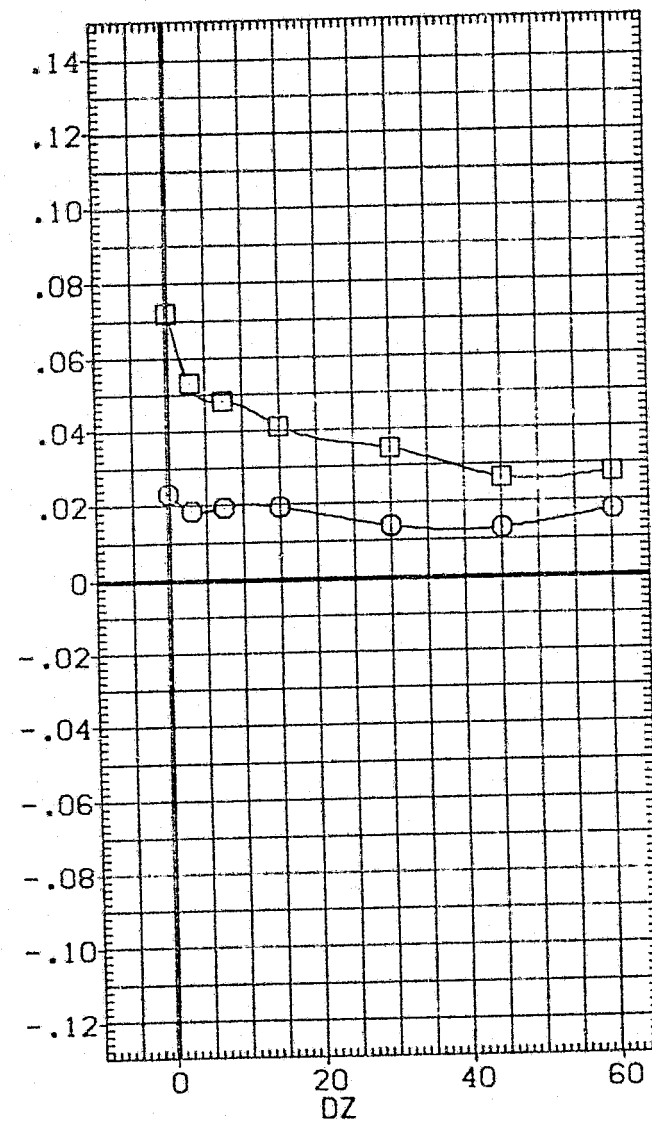
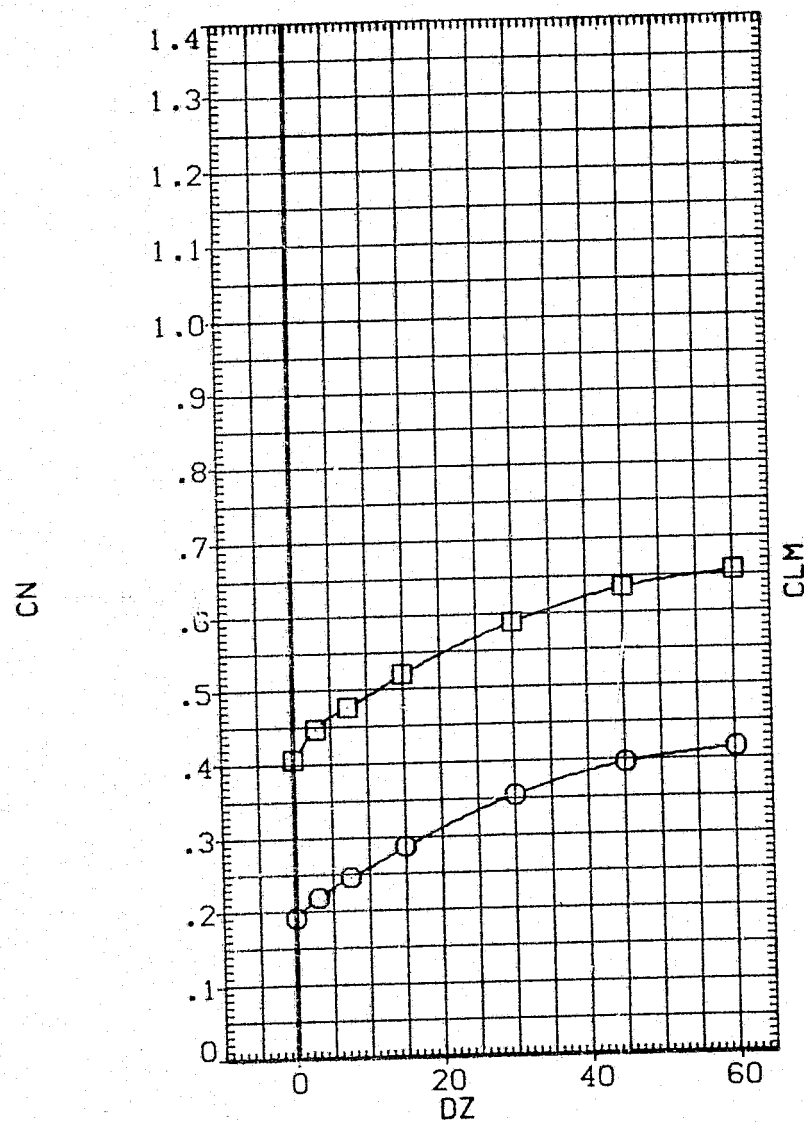


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN079)

SYMBOL		PARAMETRIC VALUES			
ALPHA0	10.000	ELV-IB	.000	ELV-CB	3.000
	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	OY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.5T.
LREF	474.8100	IN.
BREF	936.6900	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

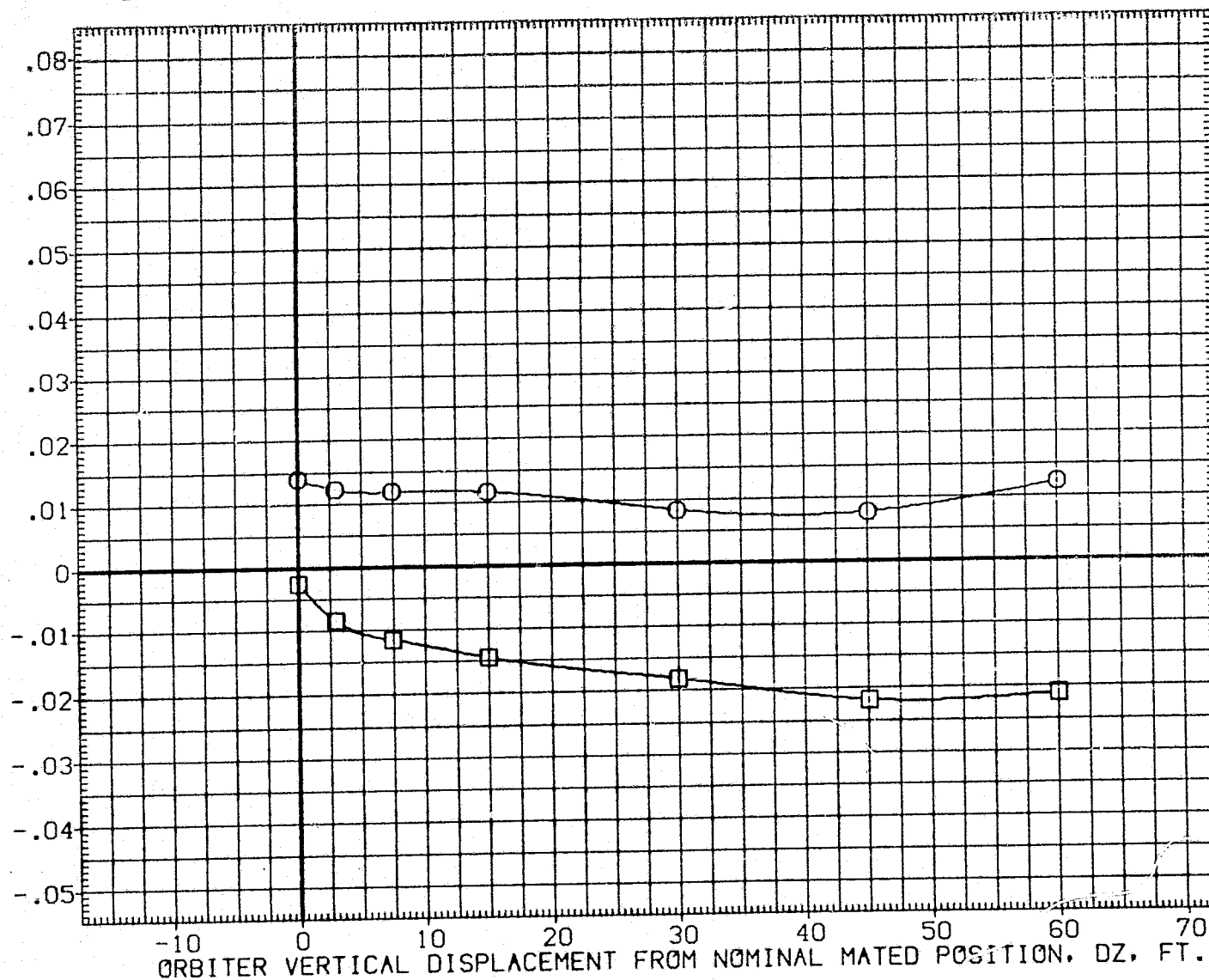


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL



ALPHA0

10.000

ELV-IB

PARAMETRIC VALUES

.000

ELV-OB

3.000

14.000

ELEVON

5.000

MACH

.600

BETAC

.000

BETAC

-5.000

PHI

7.500

DY

.000

DX

10.000

ALPHAC

8.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

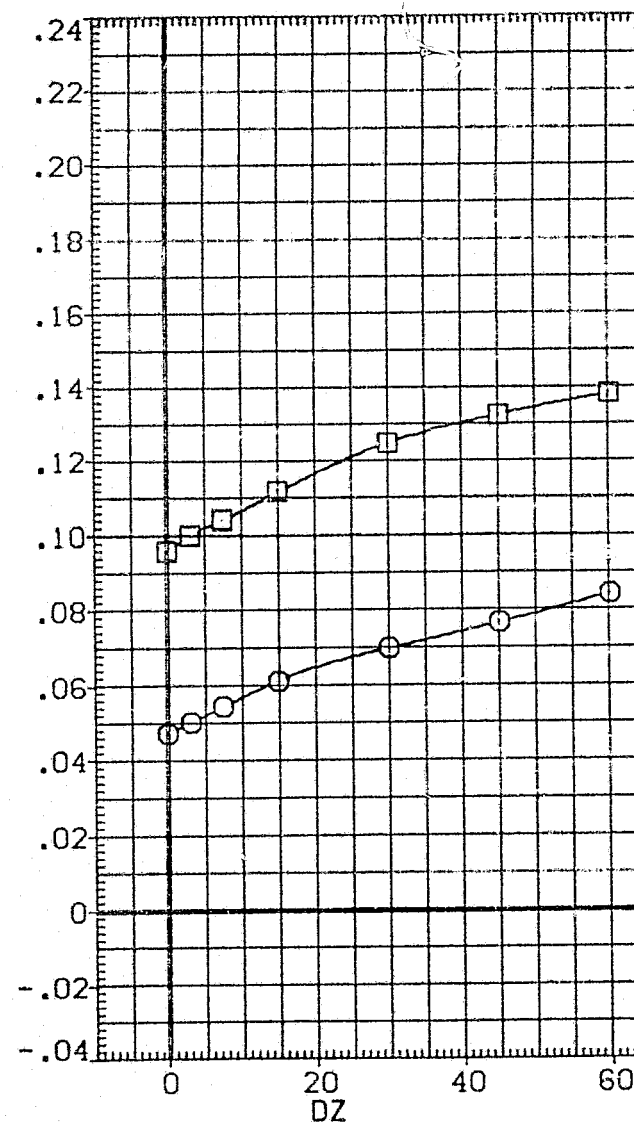
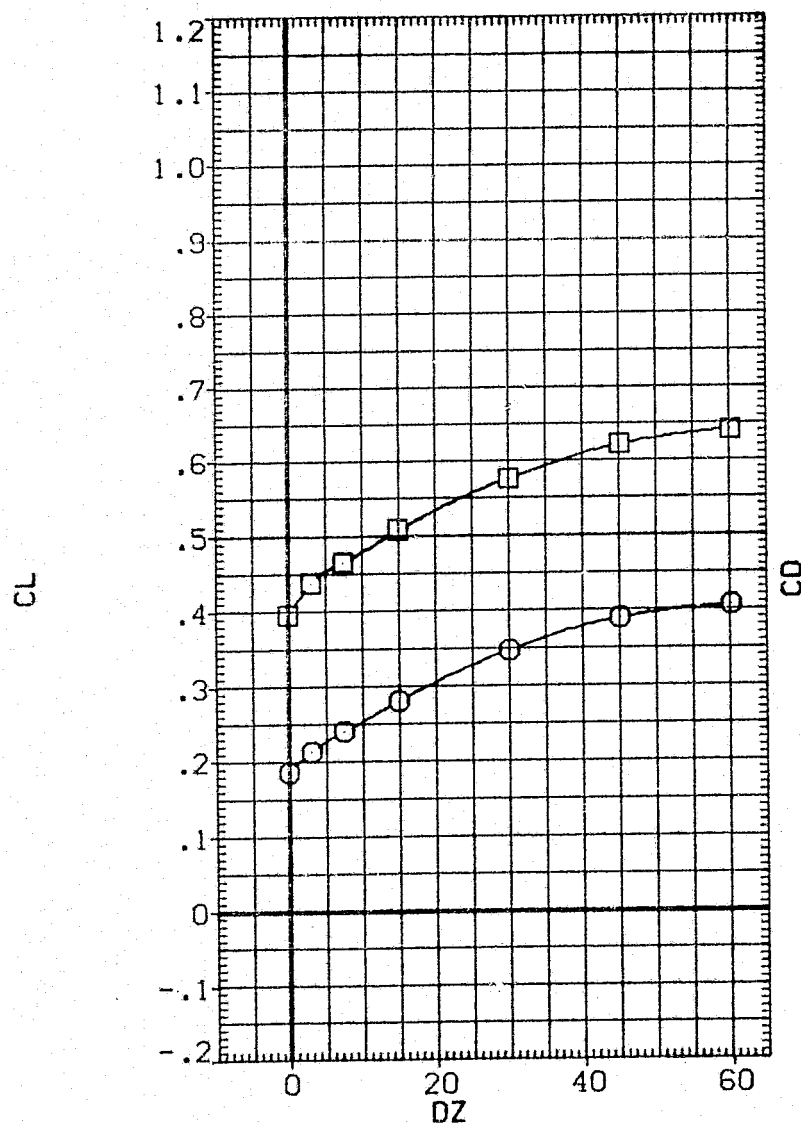


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN079)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	14.000	ELV-18	.000	ELV-08	3.000
○			ELEVON	5.000	MACH	.600
□			BETA0	.000	BETAC	-5.000
			PHI	7.500	DY	.000
			DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

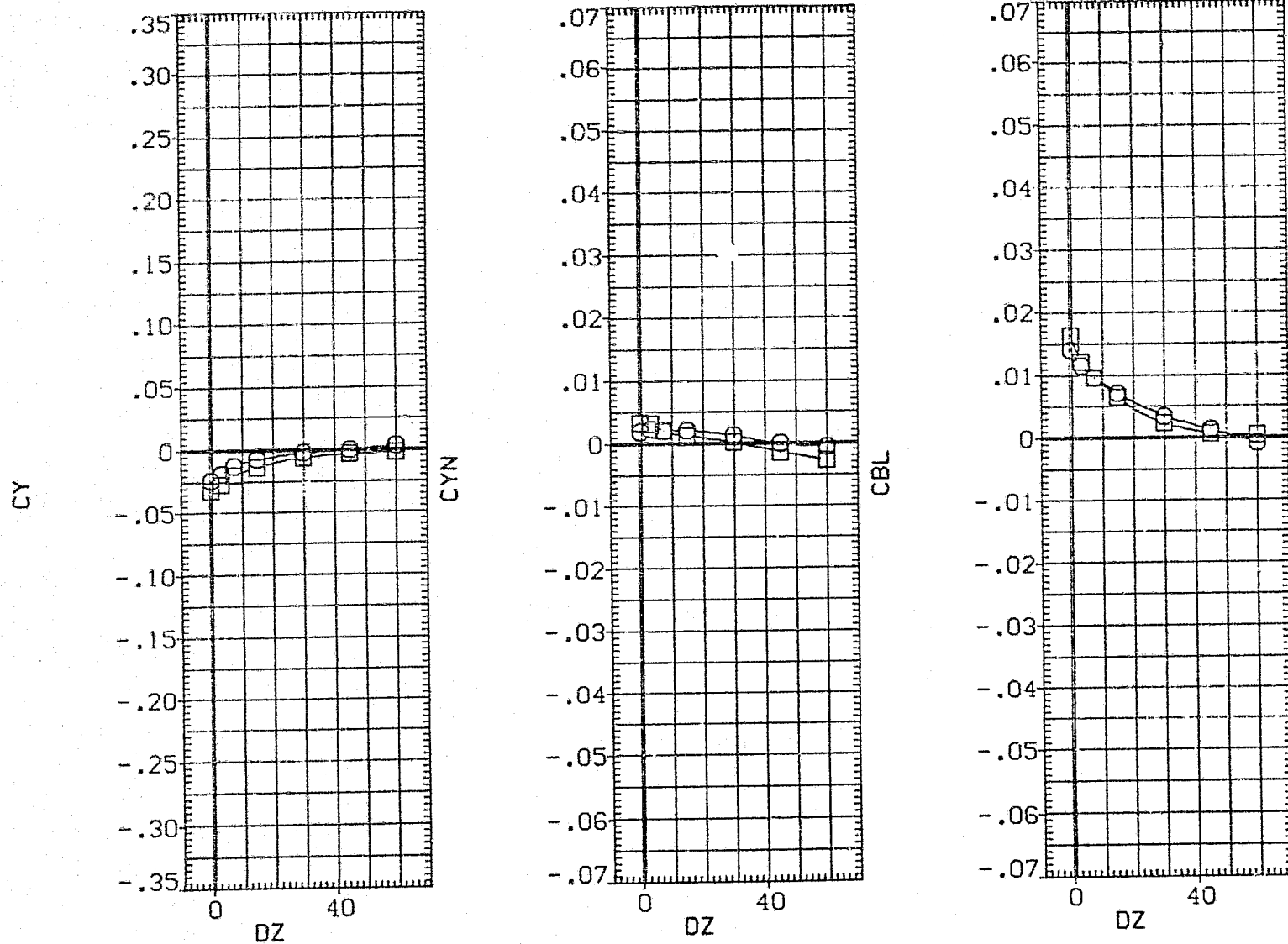


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

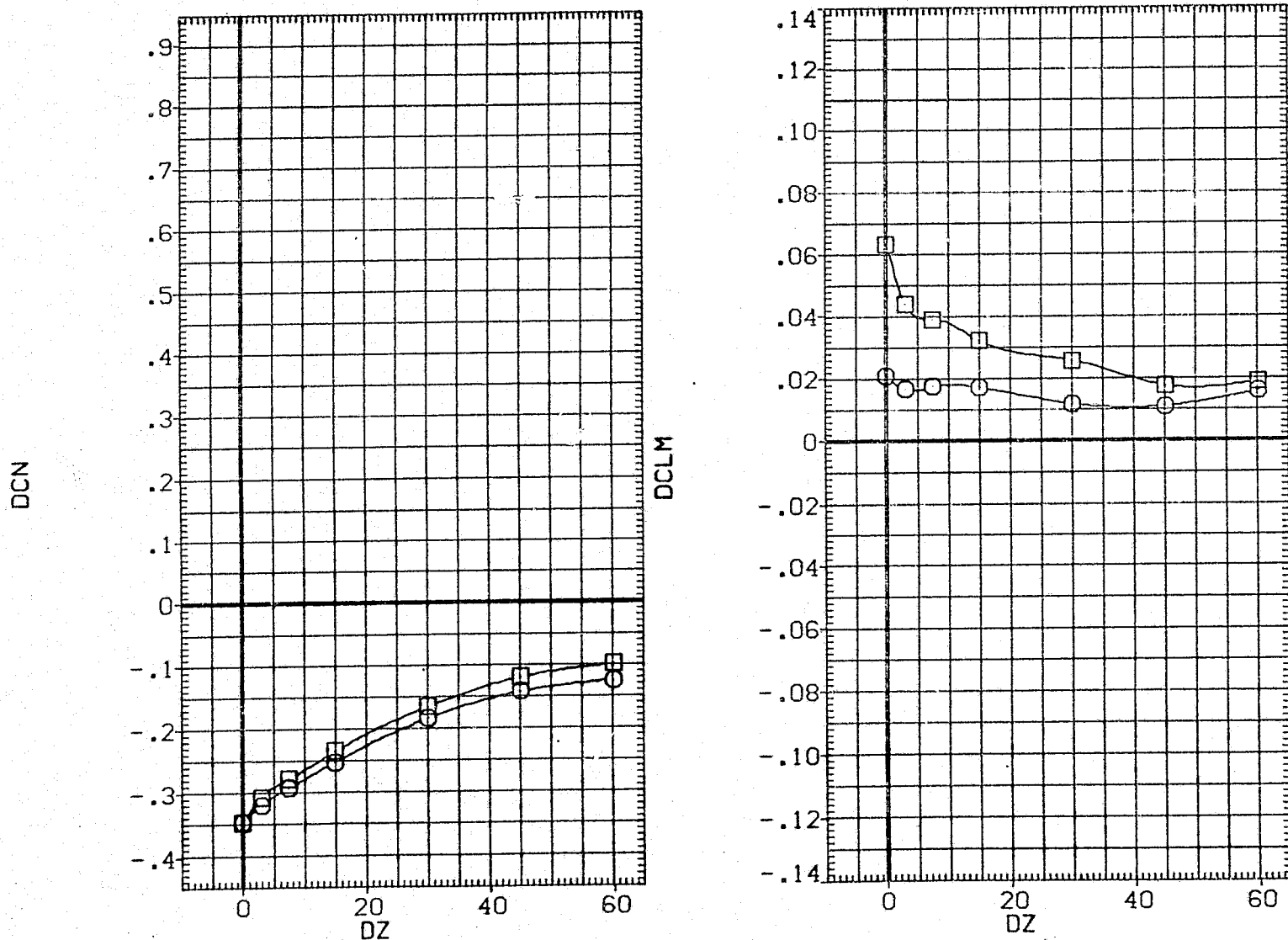


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (079 - 010)(VGN079)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC -5.000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

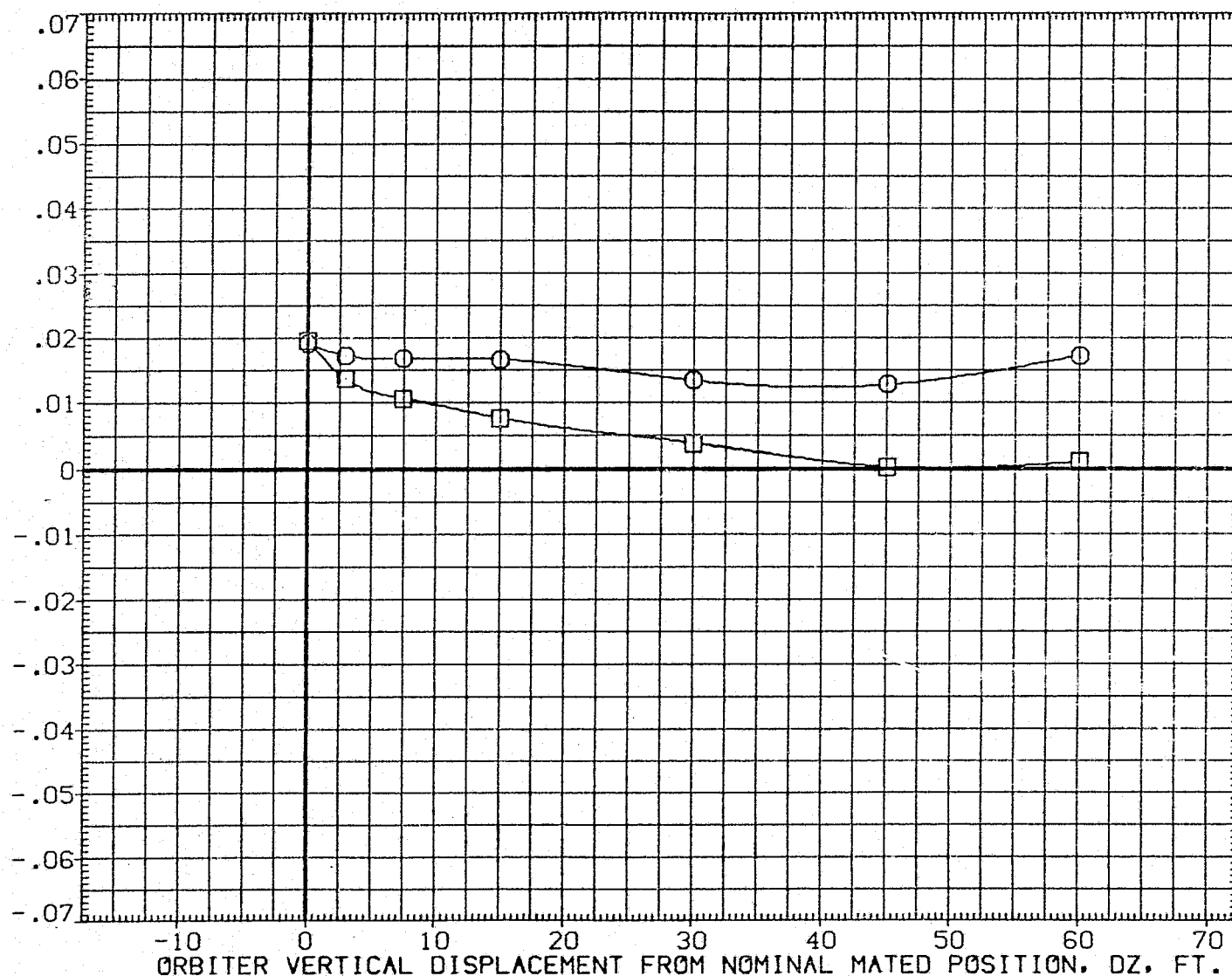


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL

○
□

ALPHA0

10.000
14.000ALPHAC
ELV-1B
ELEVON
PHI
DY

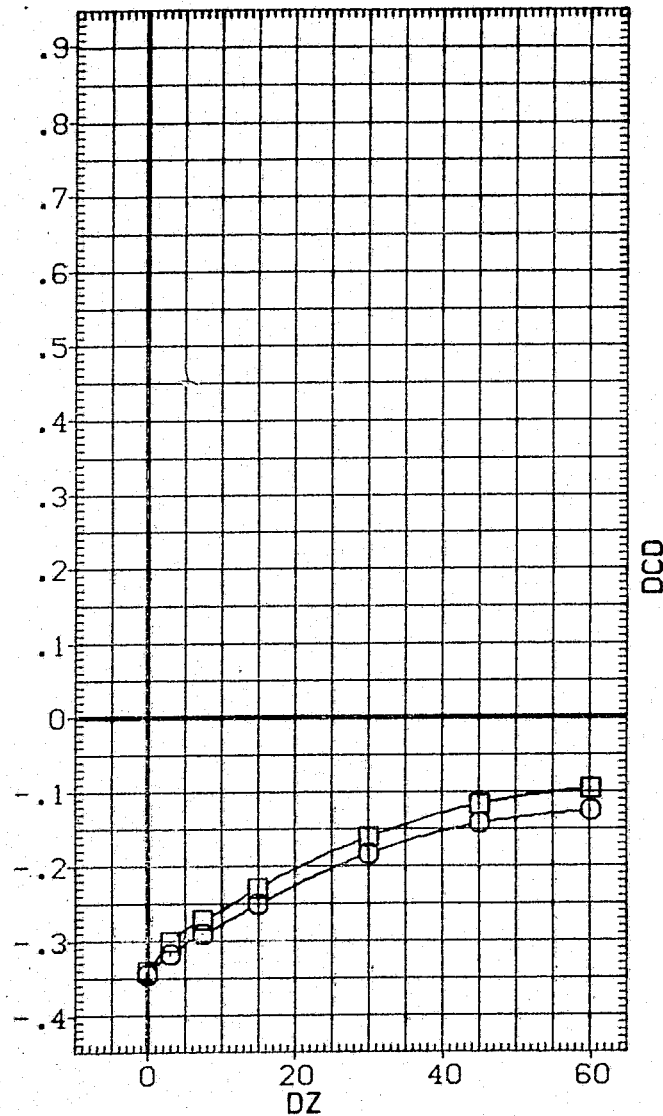
PARAMETRIC VALUES

8.000
.000
5.000
7.500
.000
BETAC
ELV-0B
MACH
BX
BETA0-5.000
3.000
.600
10.000
.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL



DCD

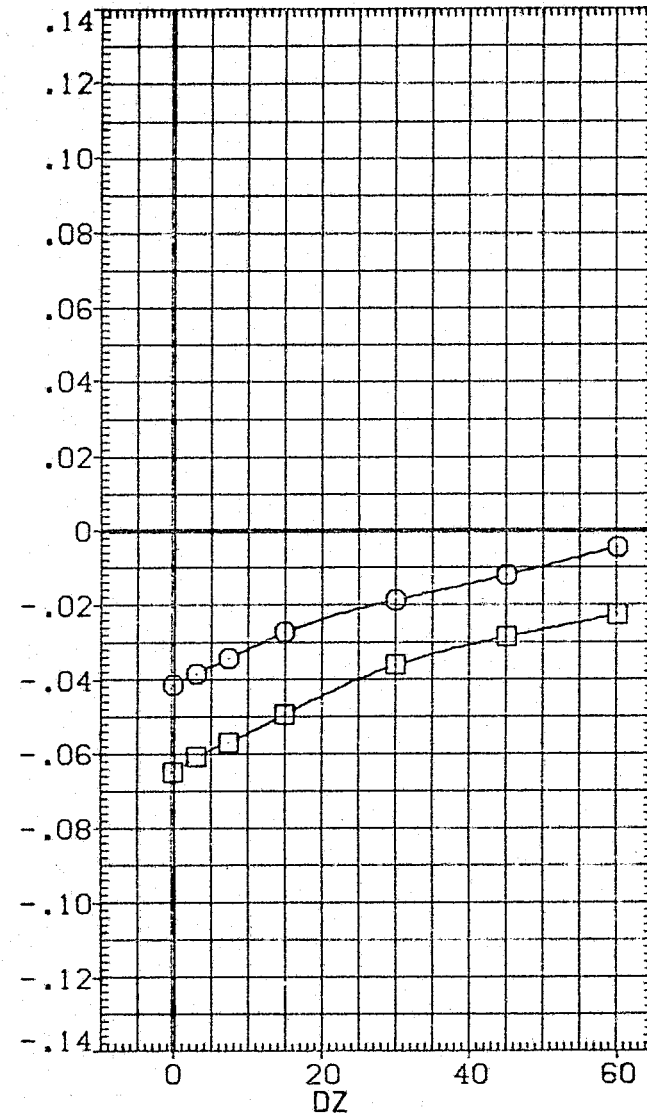


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN080)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC 3.000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

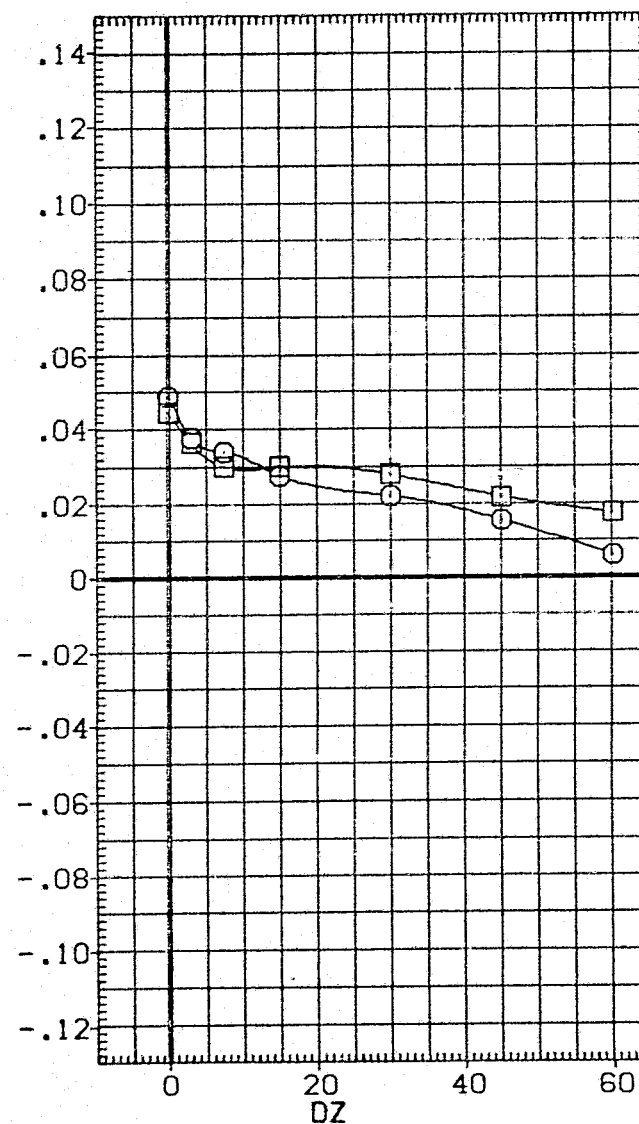
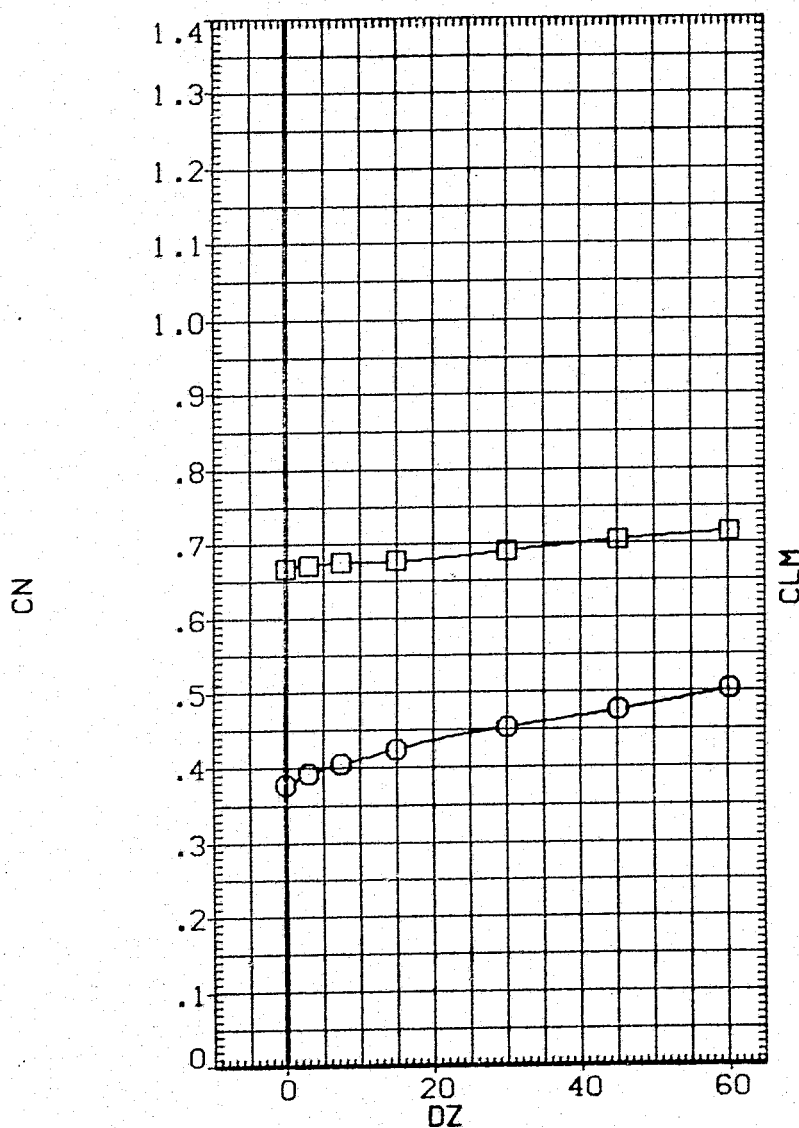


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0		PARAMETRIC VALUES				REFERENCE INFORMATION		
	10.000	14.000	ELV-1B	.000	ELV-0B	3.000	SREF	2690.0000	50.FT.
			ELEVON	5.000	MACH	.600	LREF	474.8100	IN.
			BETA0	.000	BETAC	-5.000	BREF	936.6800	IN.
			PHI	7.500	DY	10.000	XMRP	1109.0000	IN.X0
			DX	.000	ALPHAC	4.000	YMRP	.0000	IN.Y0
							ZMRP	375.0000	IN.Z0
							SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

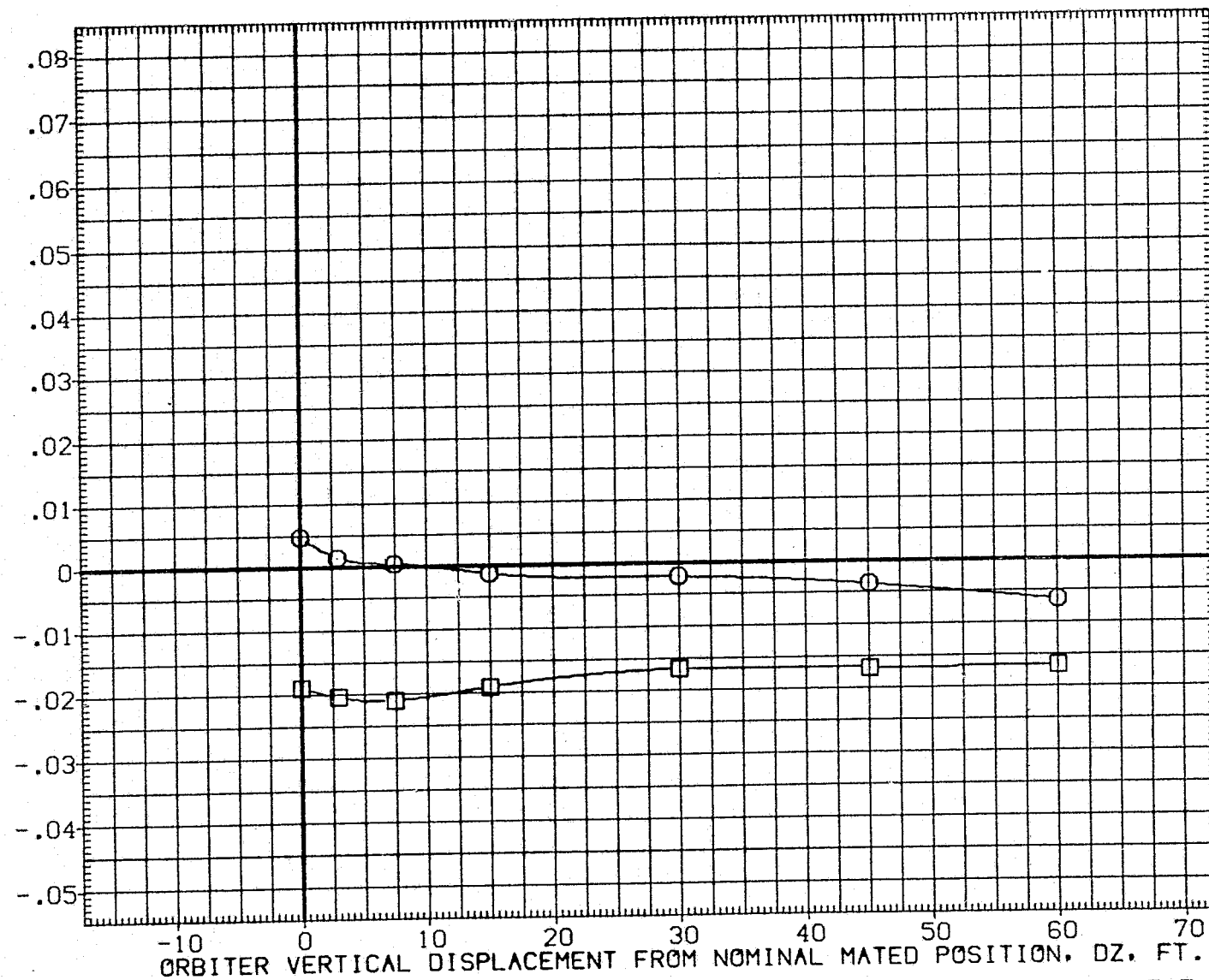


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN080)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

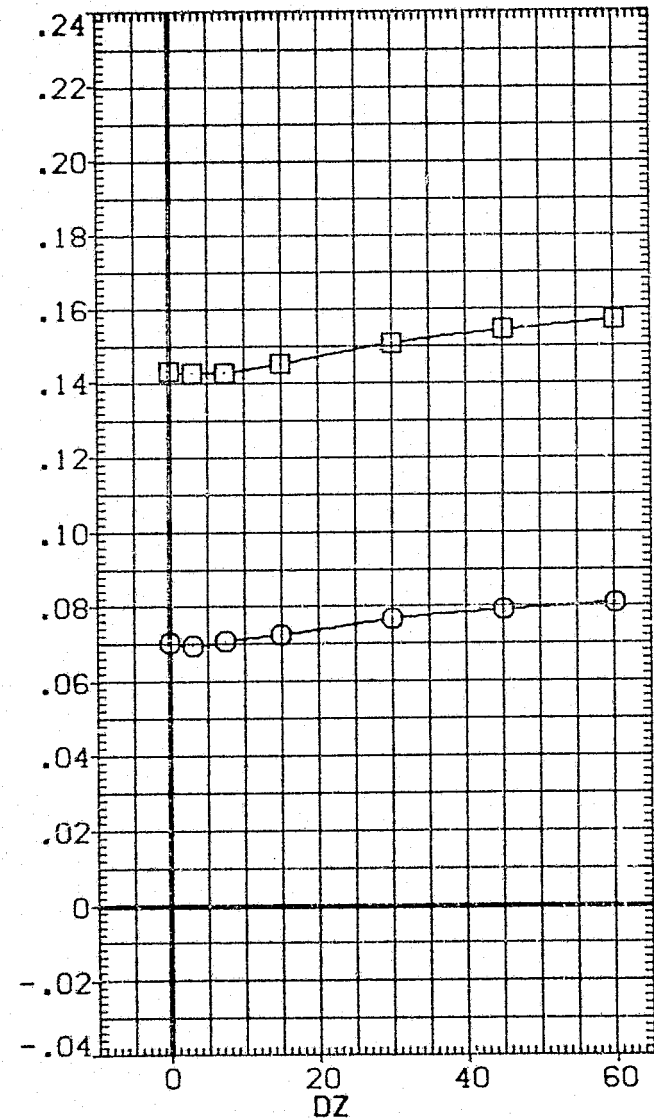
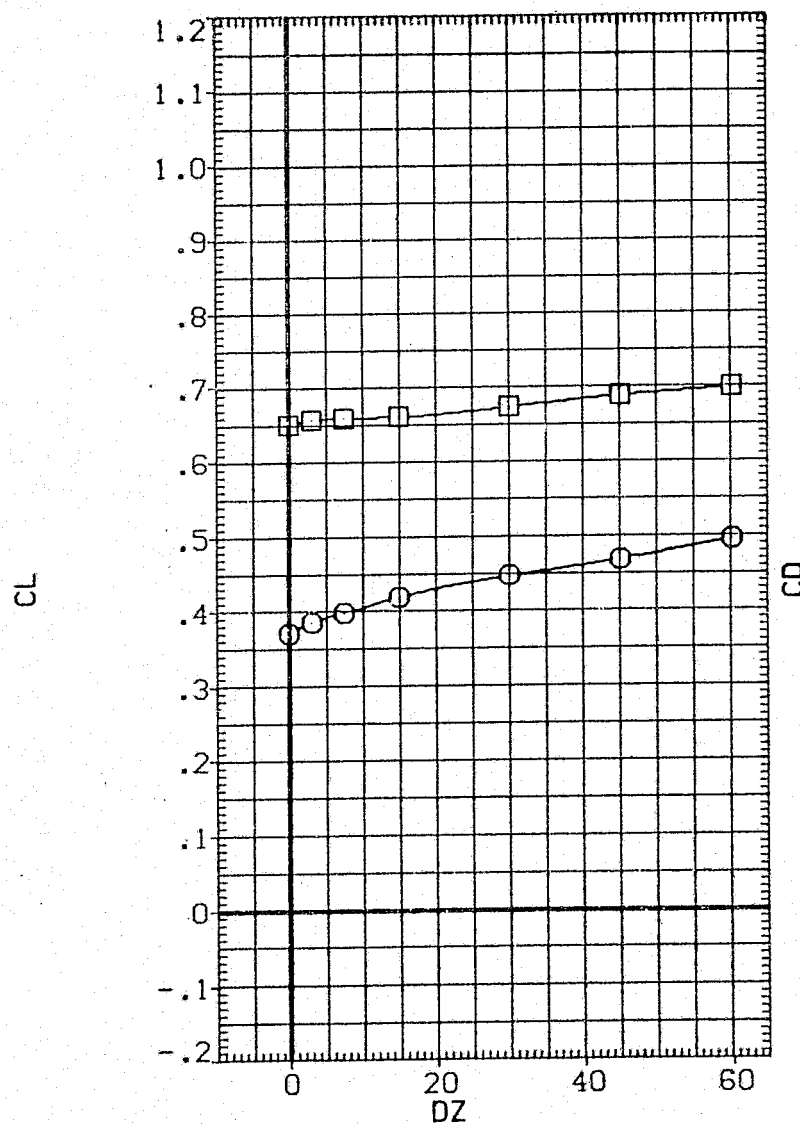


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6600	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

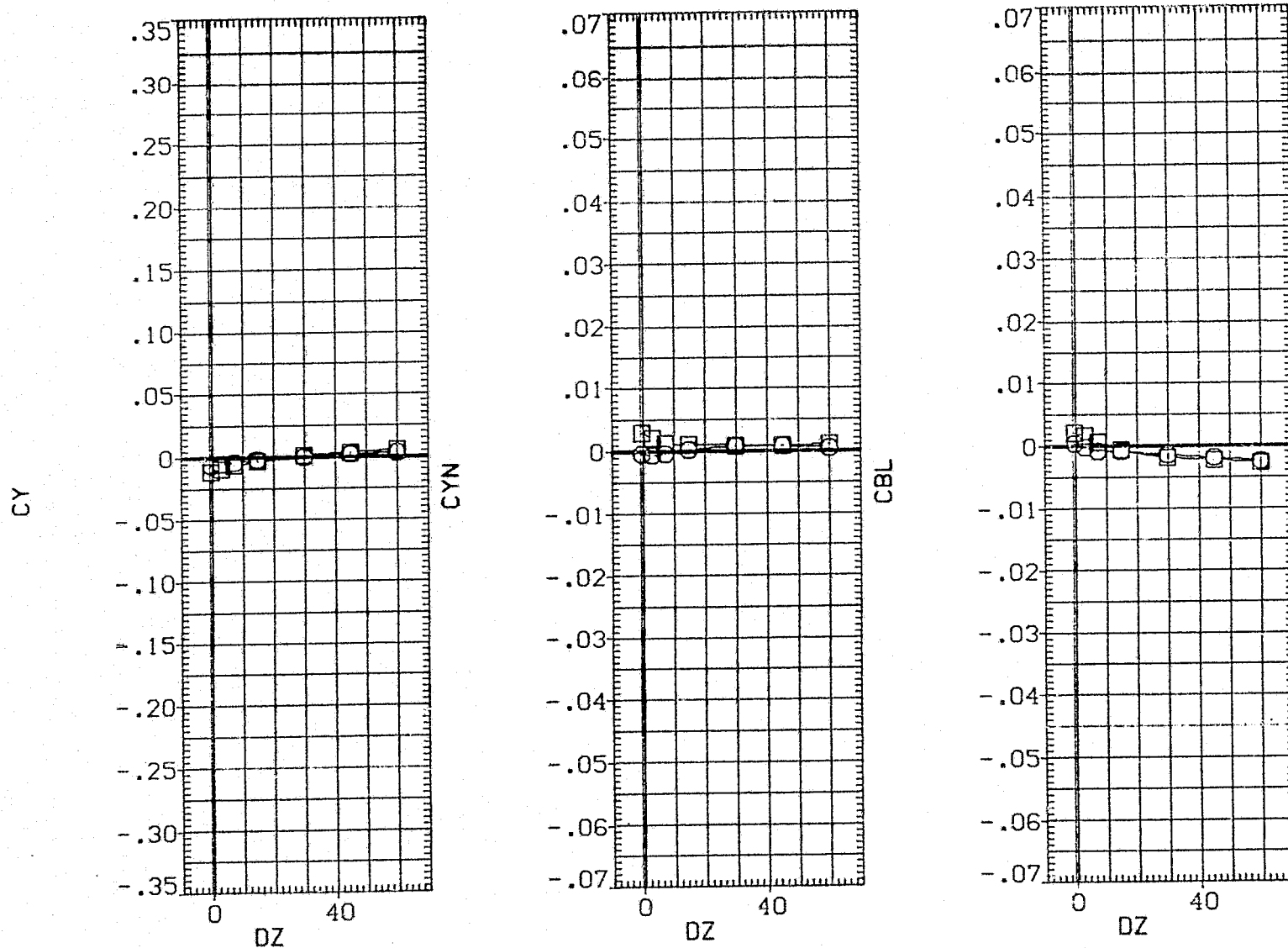


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (080 - 010) (V6N080)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

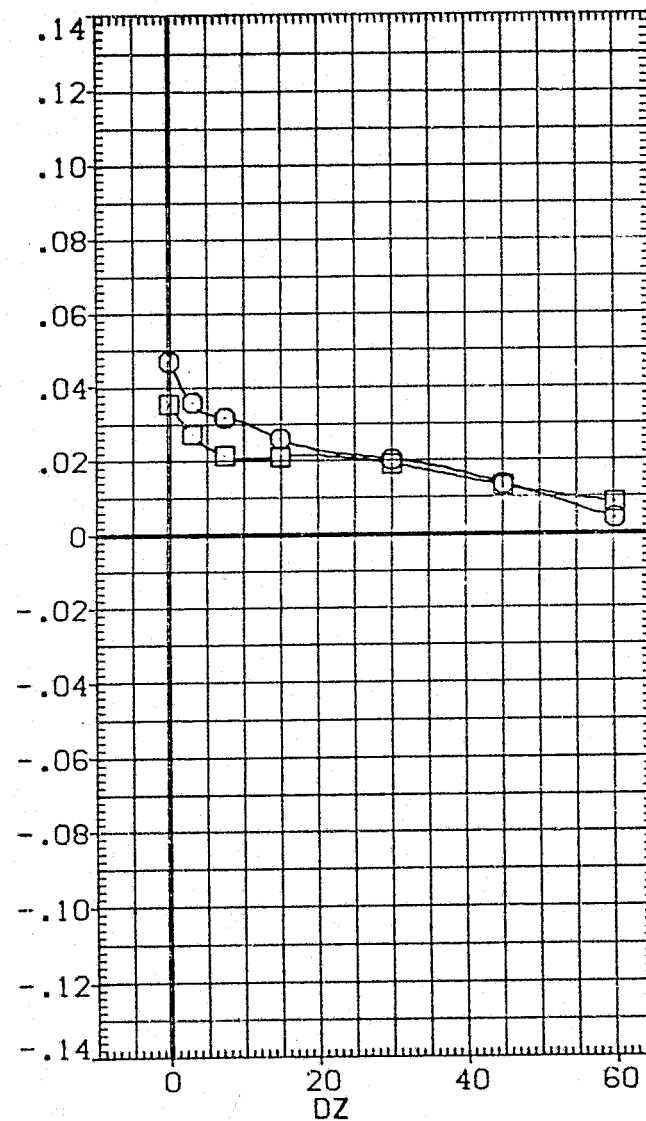
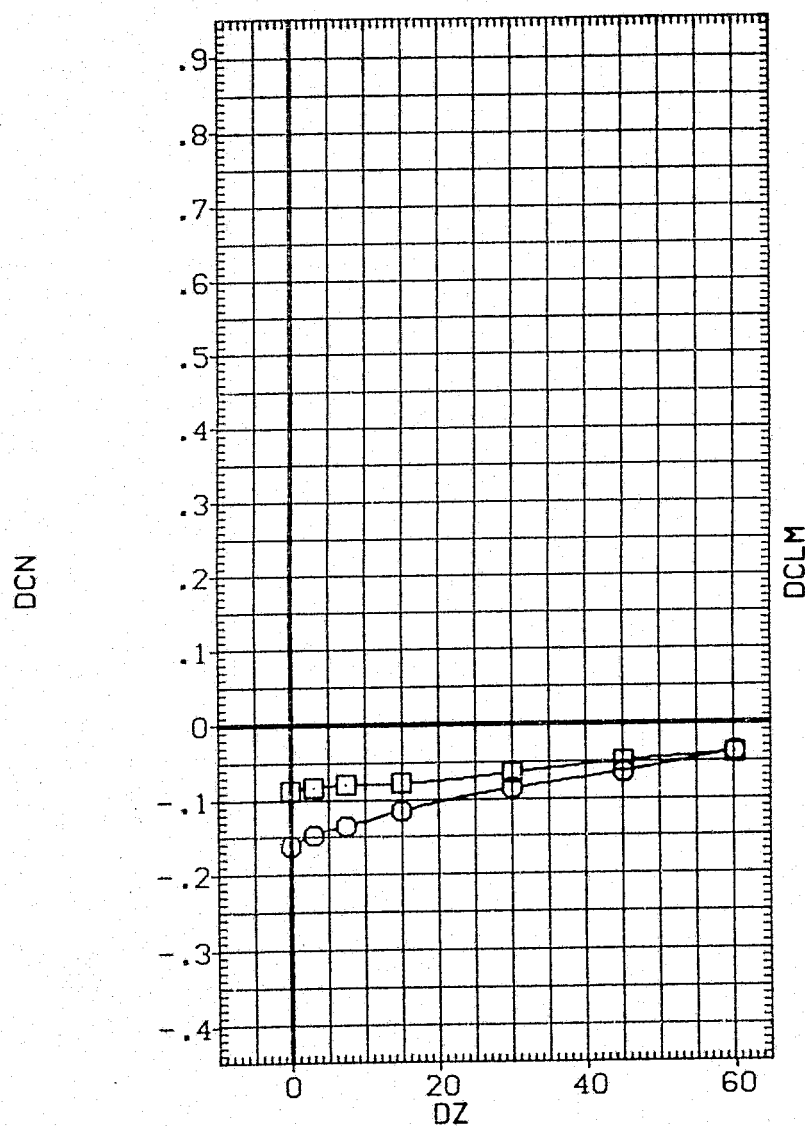


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (080 - 010) (VGN080)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

7.500

10.000

BETAC

ELV-08

MACH

DX

BETA0

-5.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.0100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

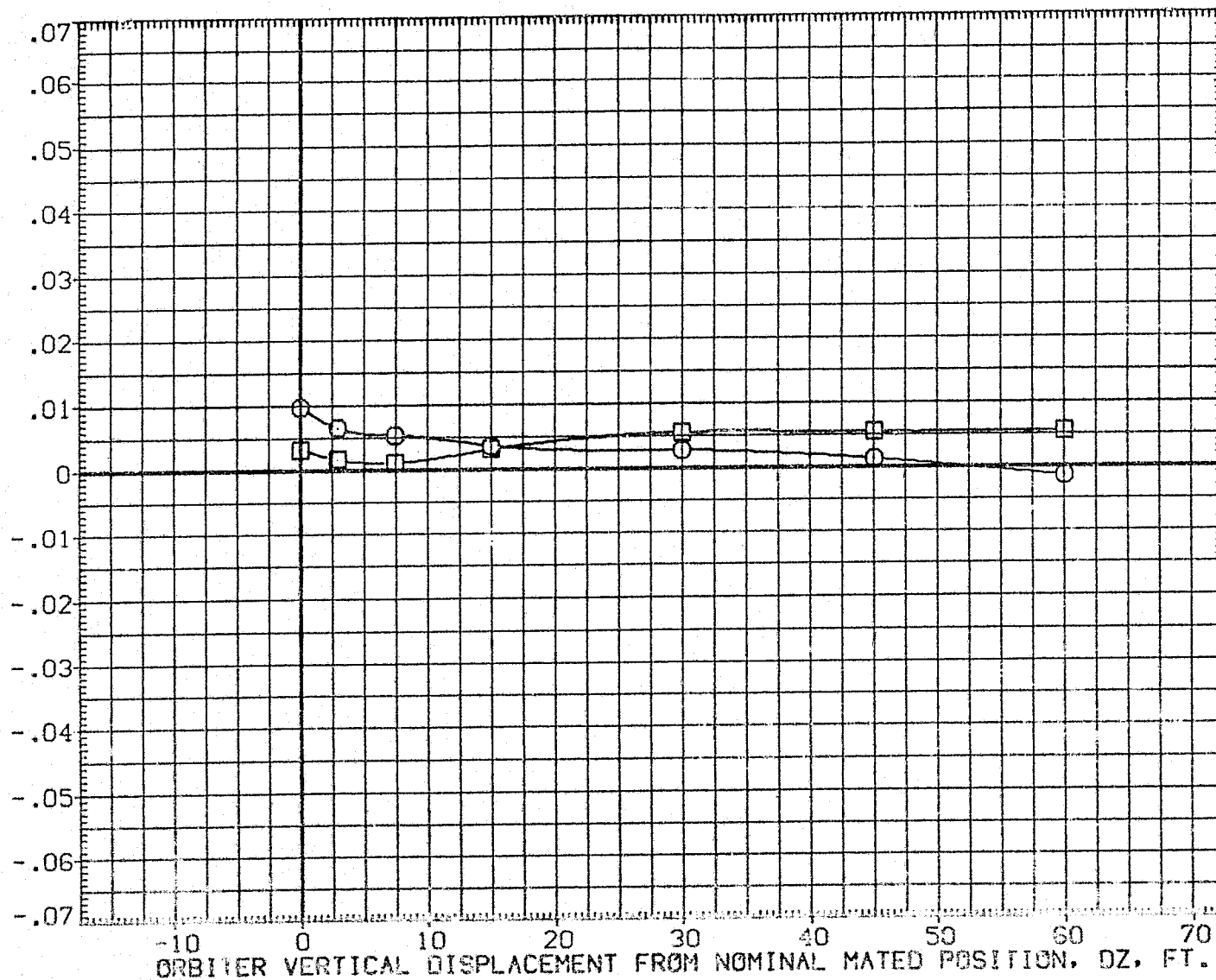


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (080 - 010)(VGN080)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

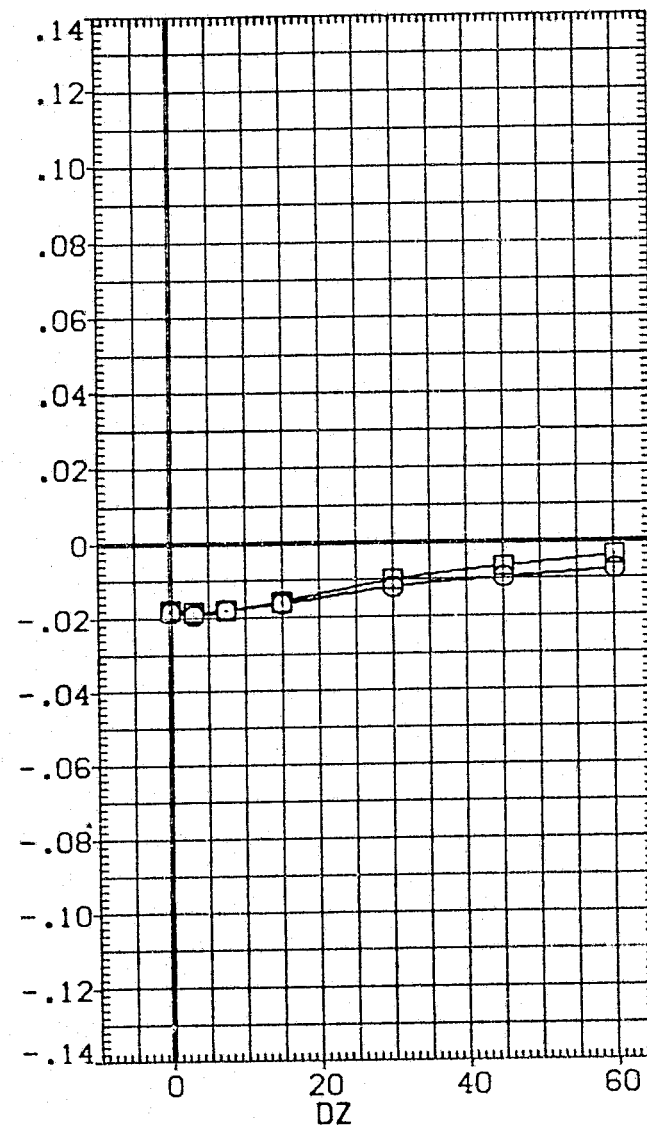
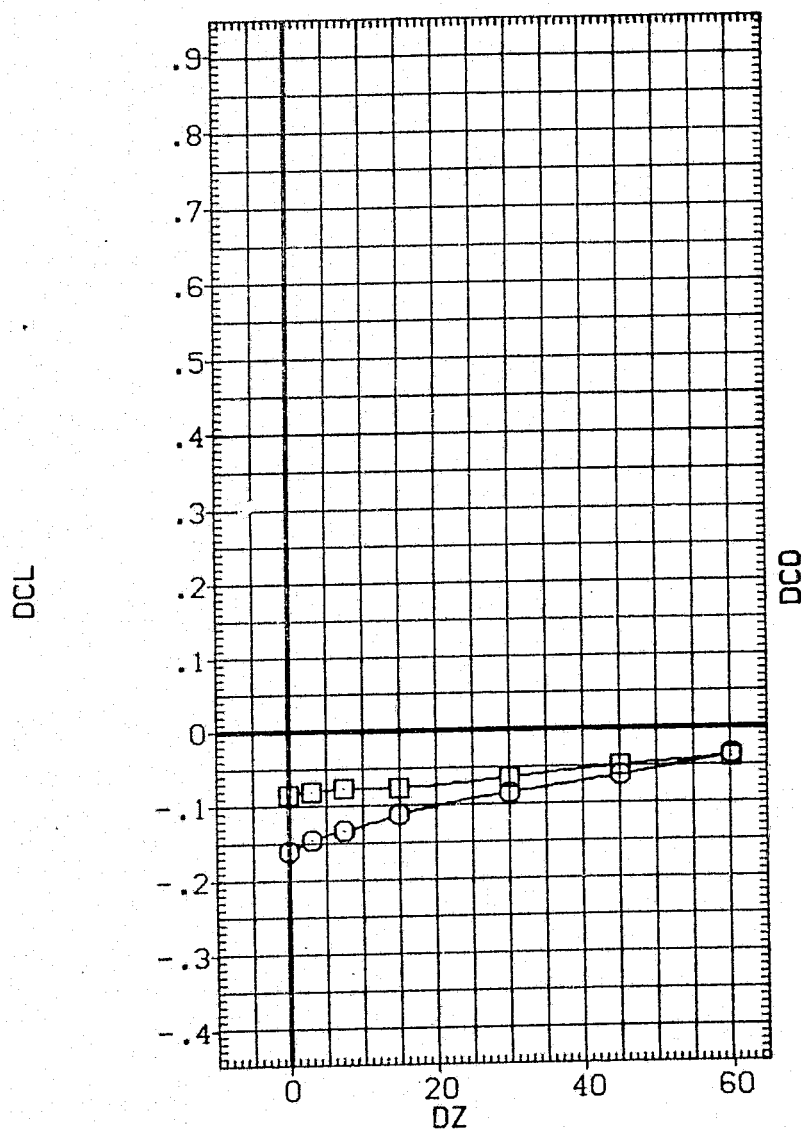


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000	ELEVON	.000	MACH	.600
□	14.000	BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	EO.FT.
LREF	474.8100	N.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

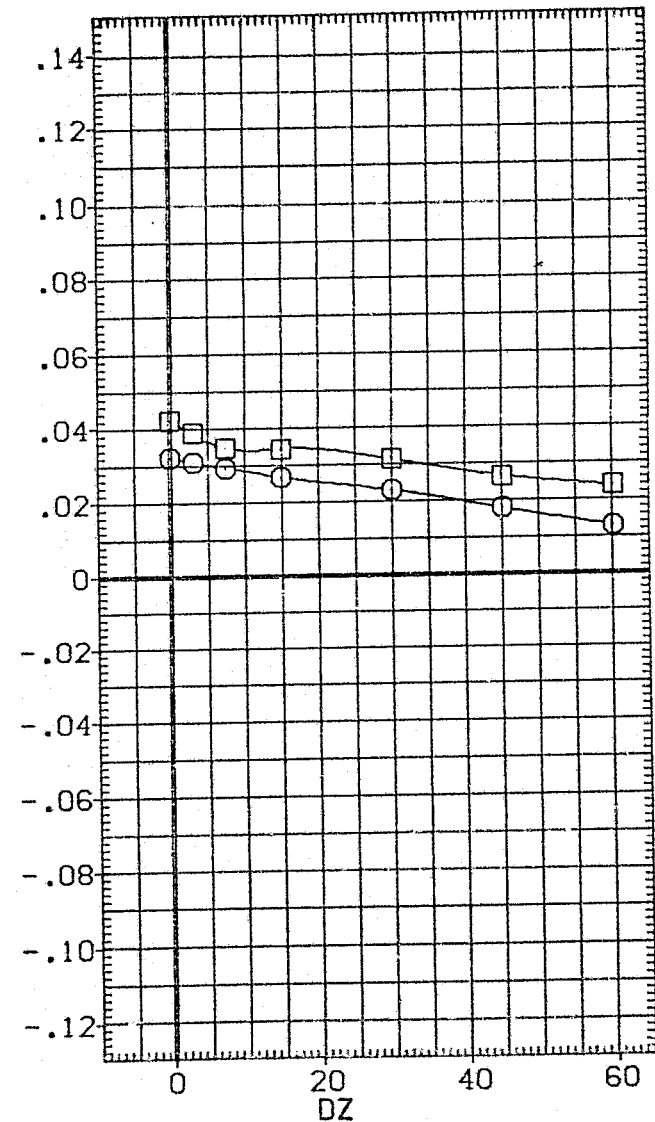
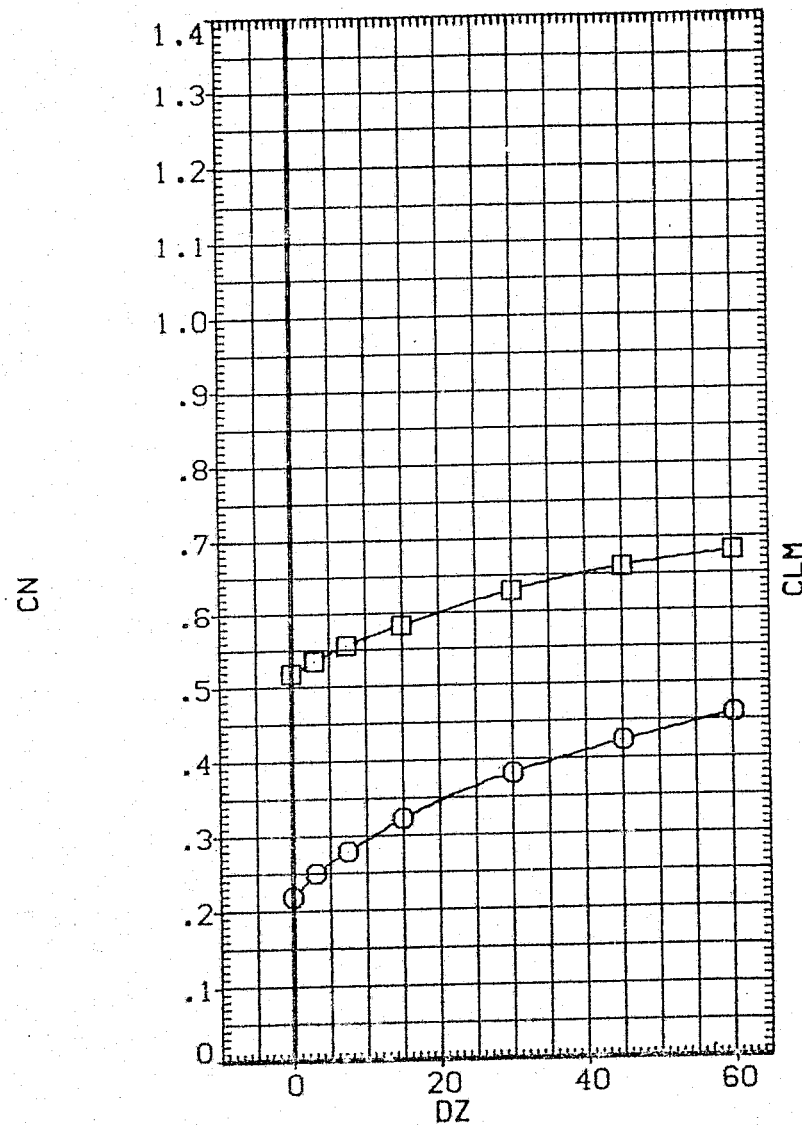


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN082)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

7.500

.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

-5.000

10.000

8.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

AXIAL FORCE COEFFICIENT, CA

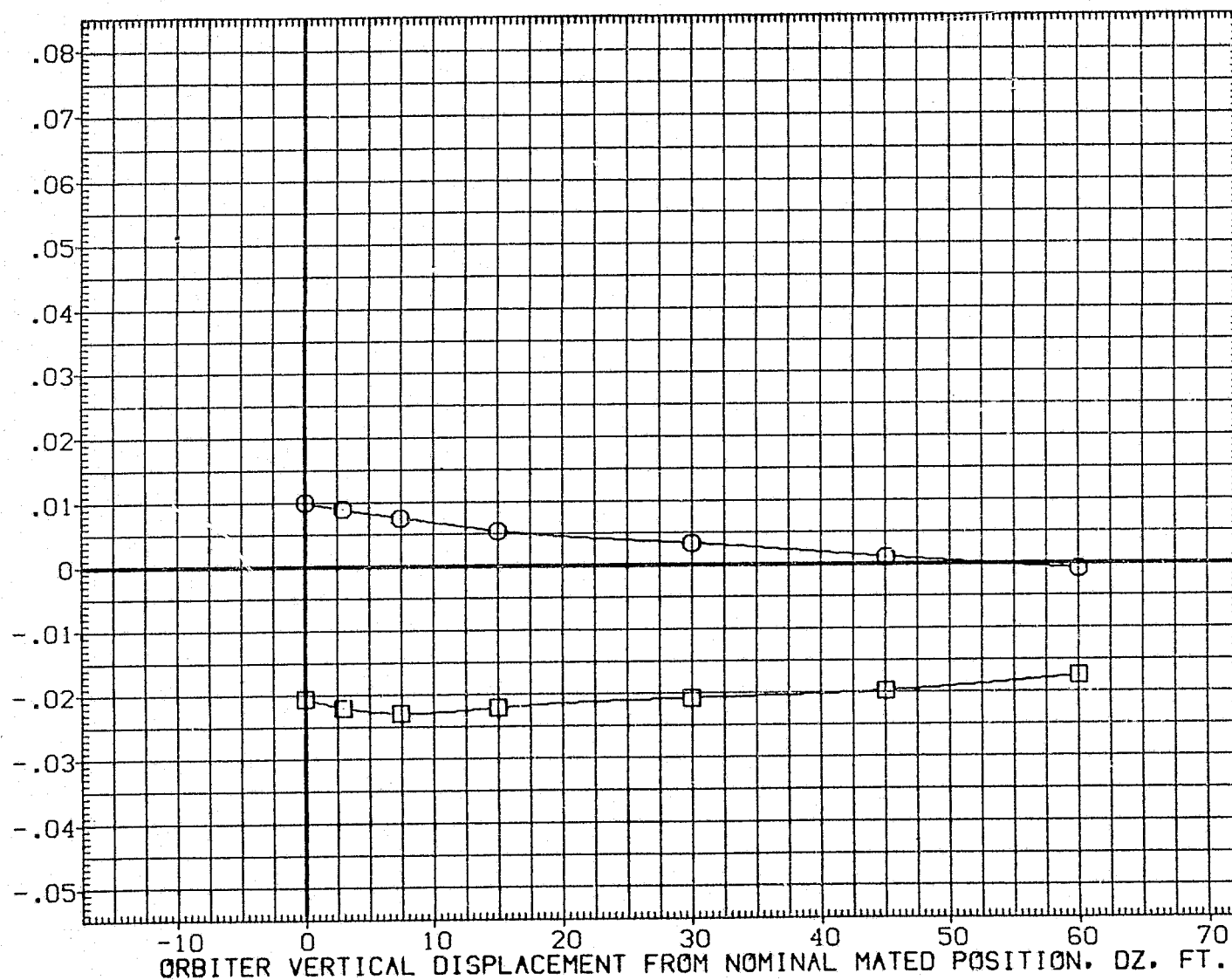


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

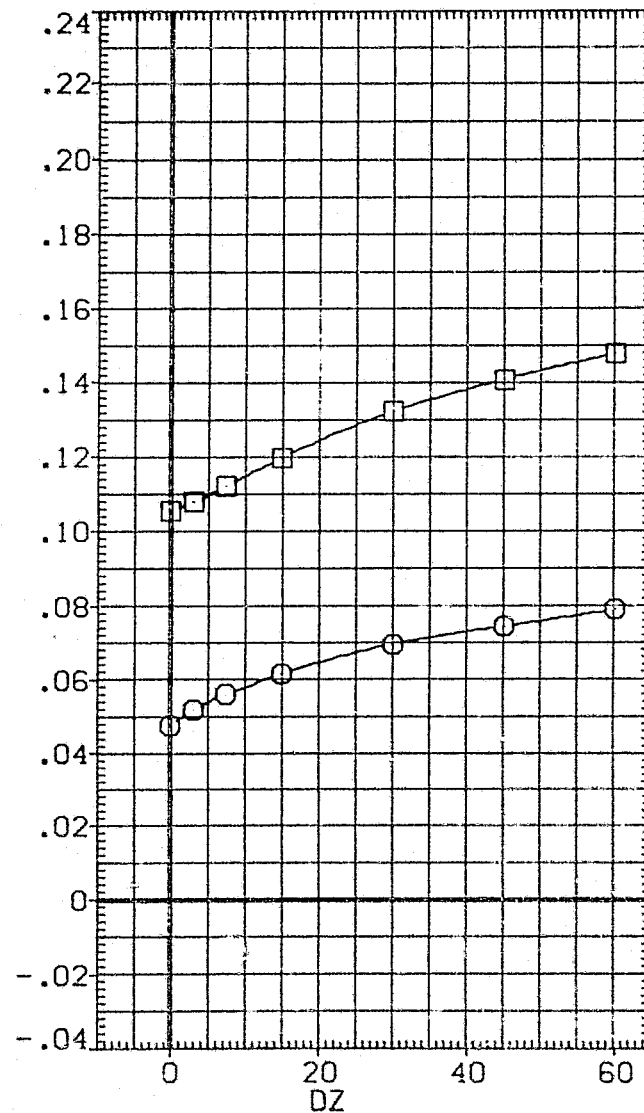
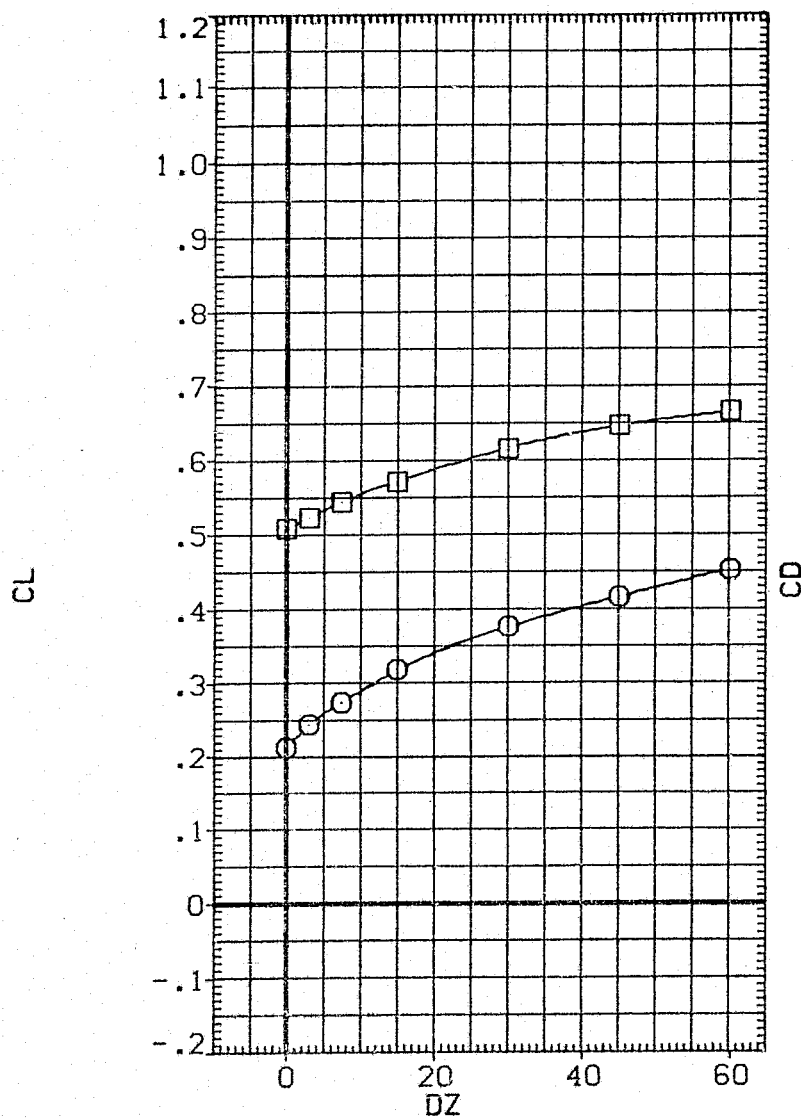


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN082)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

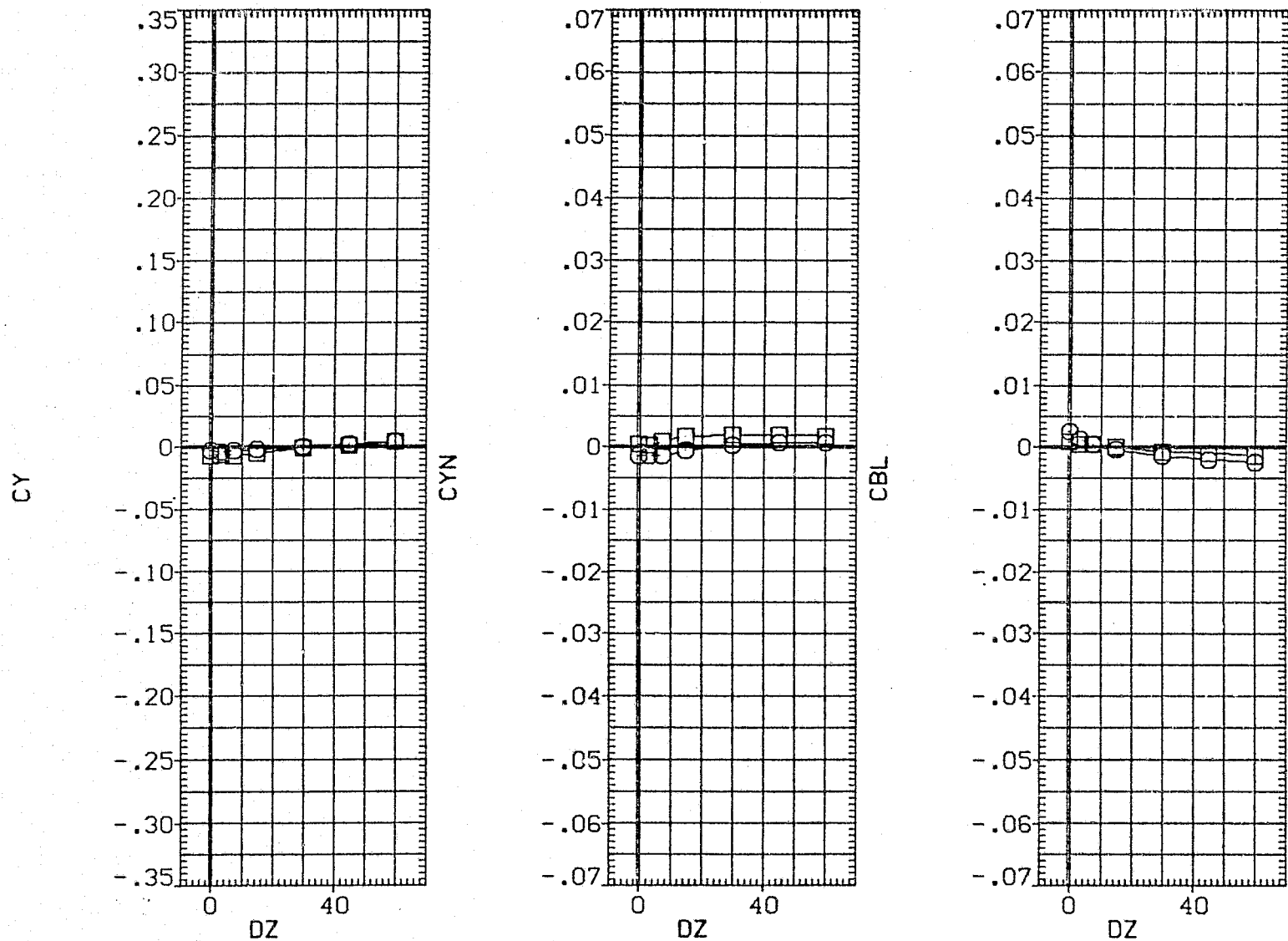


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (082 - 010) (VGN082)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

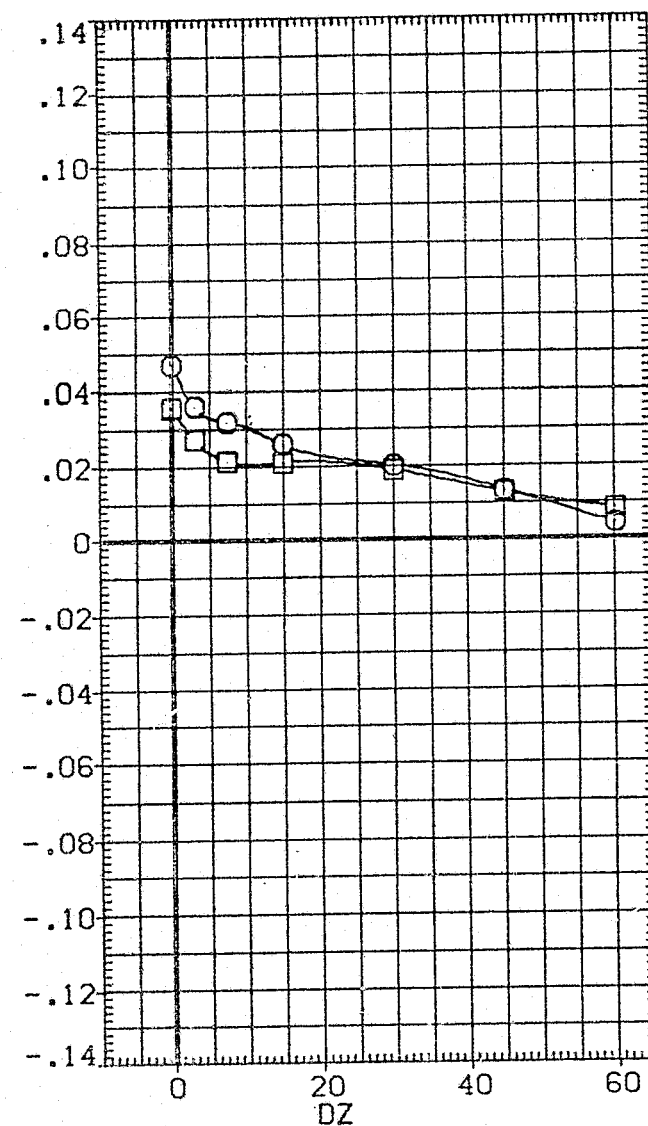
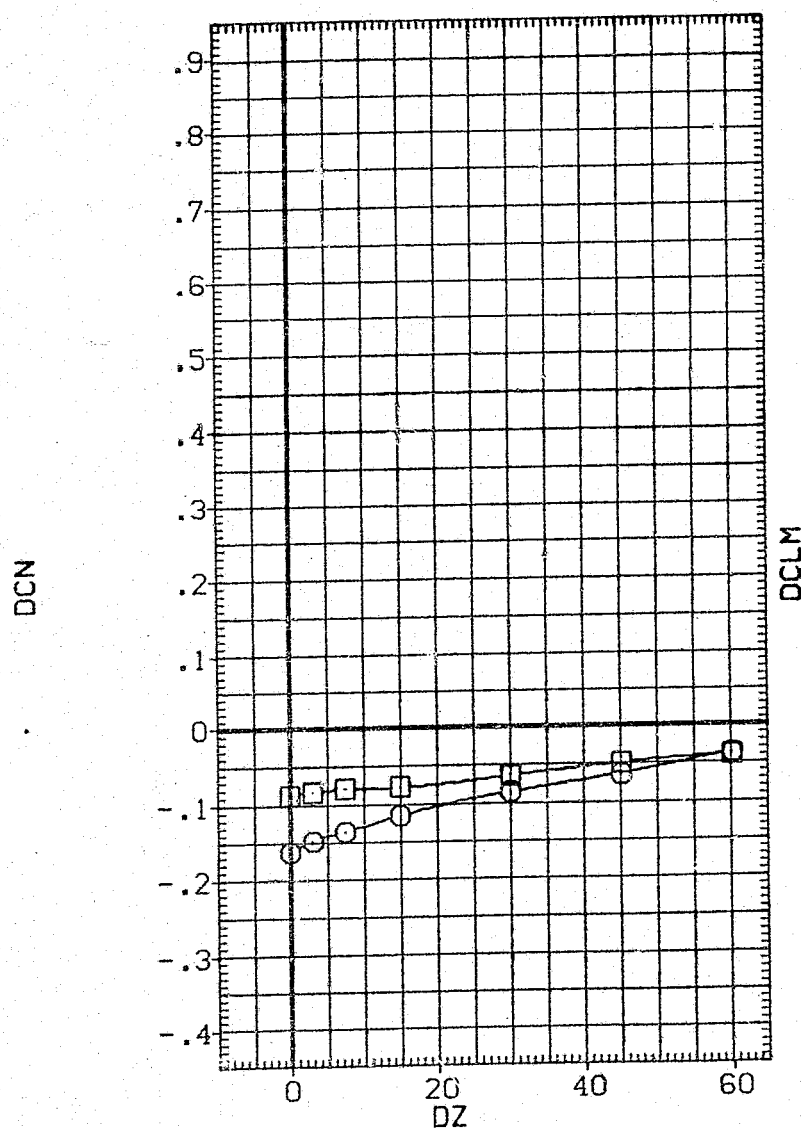


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) . D/S (082 - 010)(VGN082)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	10.000	ALPHAC	4.000	BETAC	-5.000	SREF	2690.0000	SQ.FT.
□	14.000	ELV-1B	.000	ELV-0B	3.000	LREF	474.8100	IN.
		ELEVON	5.000	MACH	.600	BREF	936.6800	IN.
		PHI	7.500	DX	.000	XMRP	1109.0000	IN.X0
		DY	10.000	BETA0	.000	YMRP	.0000	IN.Y0
						ZMRP	375.0000	IN.Z0
						SCALE	.0300	

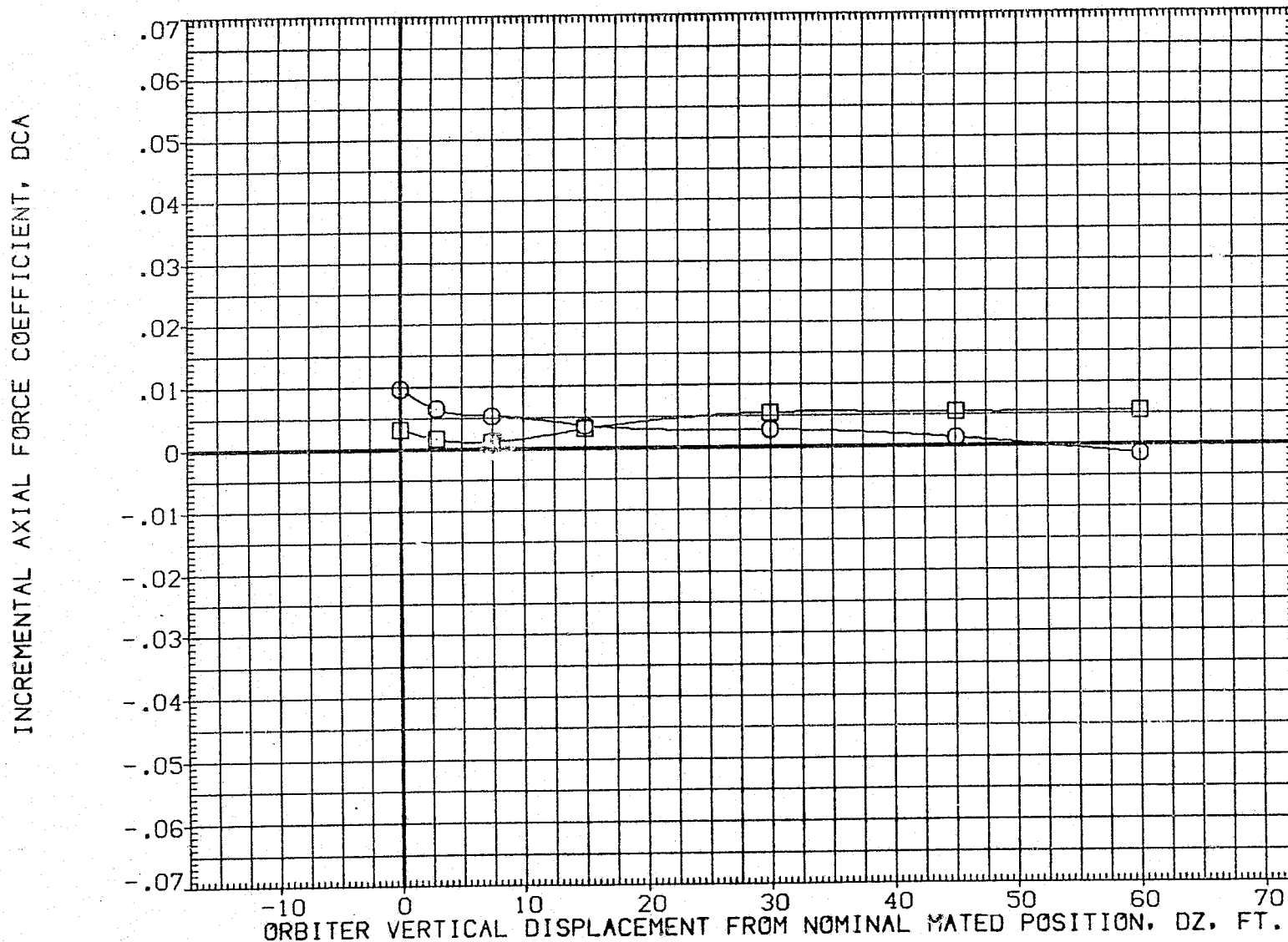


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (082 - 010) (VGN082)

SYMBOL



ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

-5.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

7.500

DX

.000

DY

10.000

BETA0

.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL

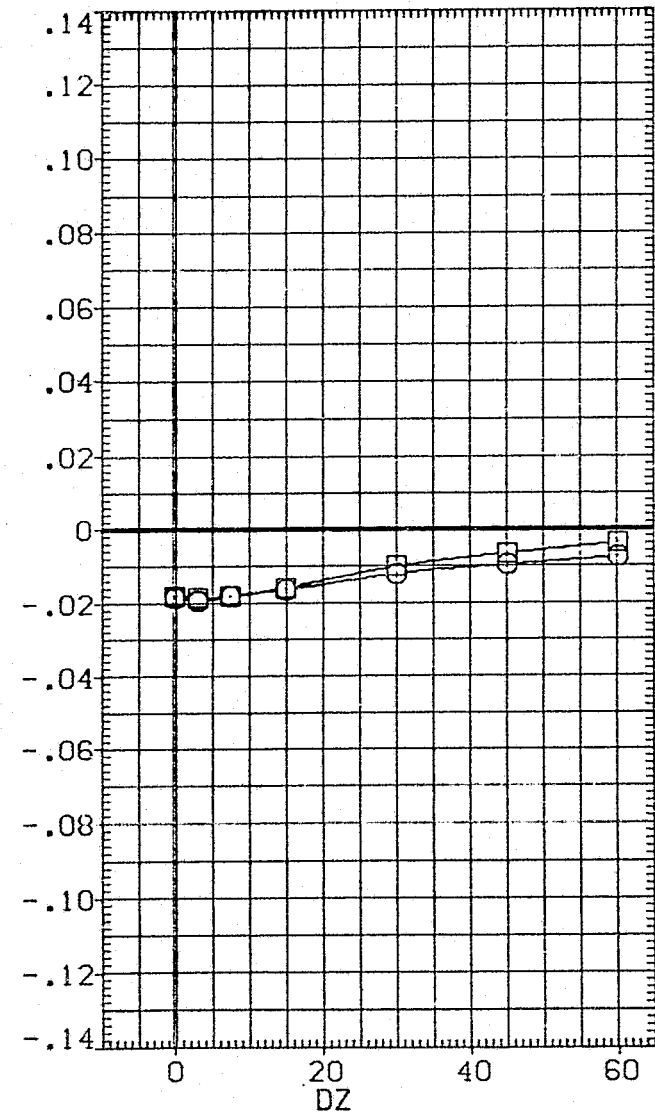
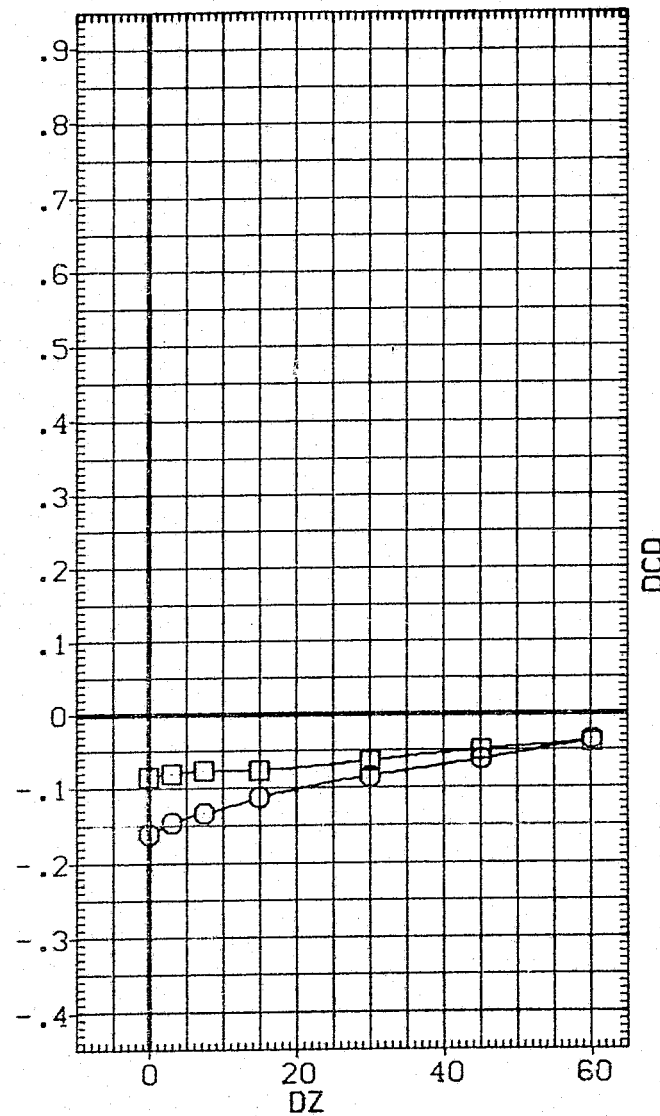


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN081)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

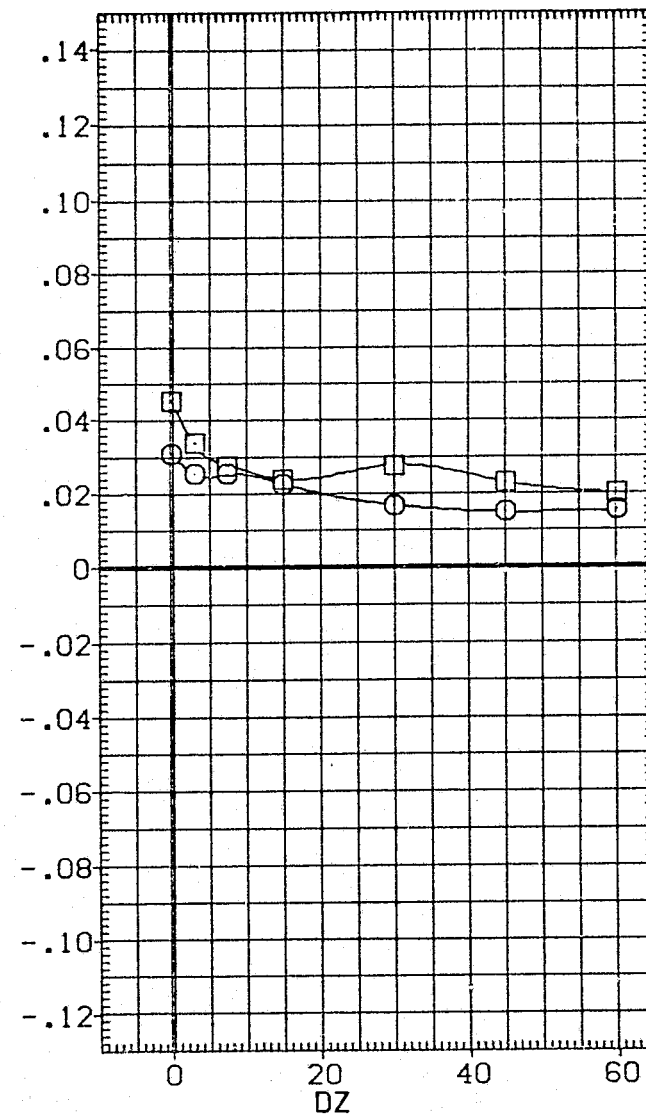
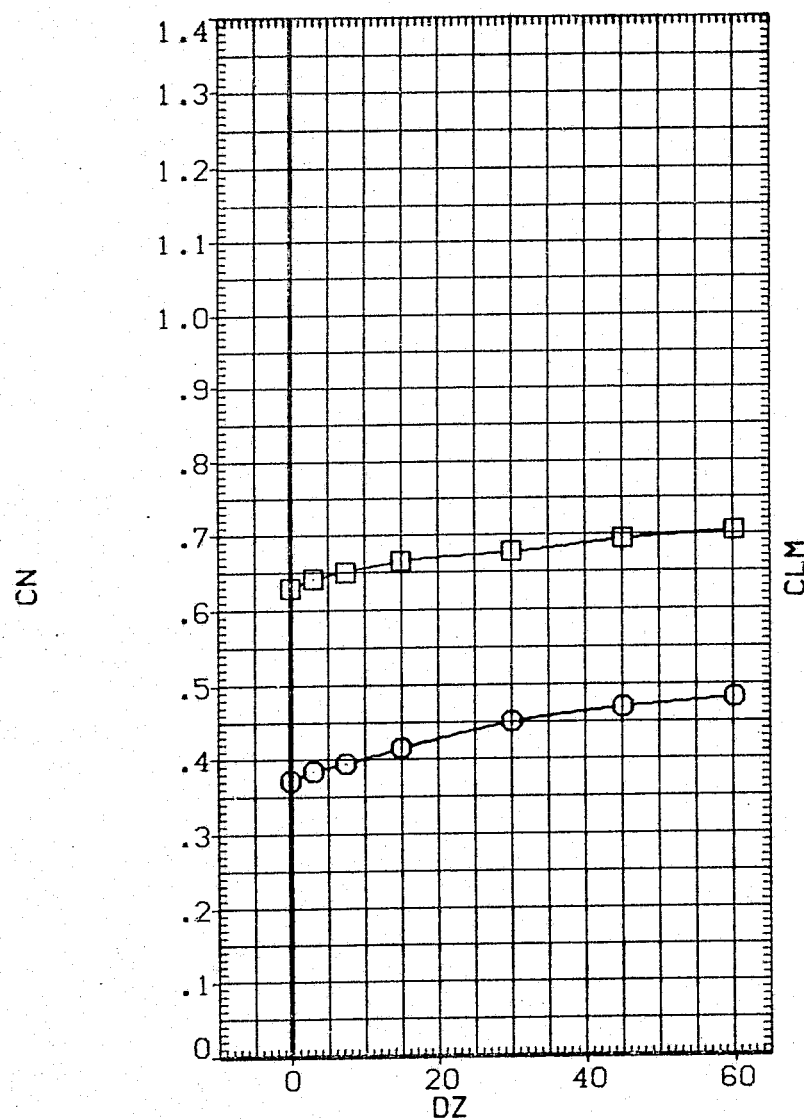


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI 7.500 OY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

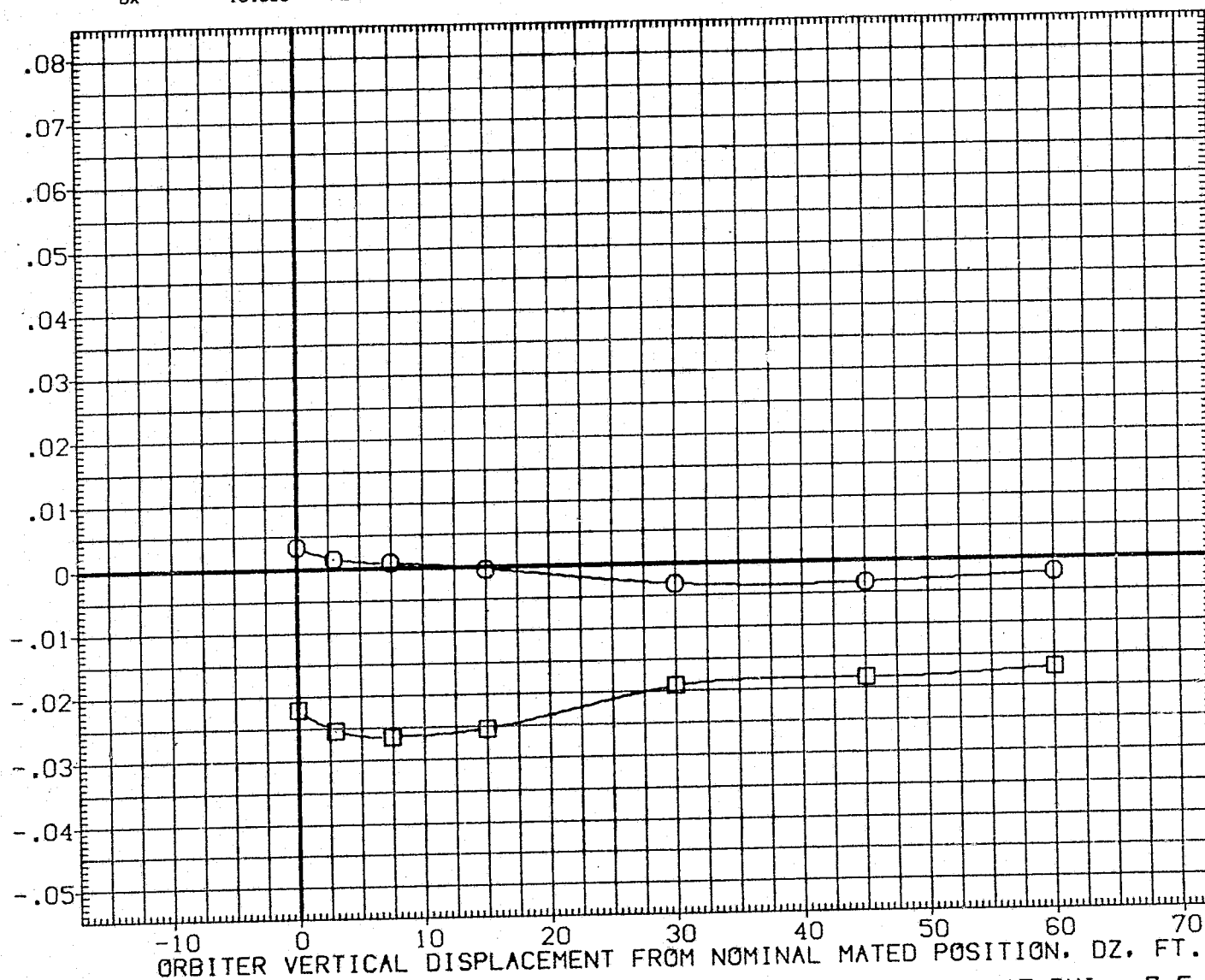


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN081)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

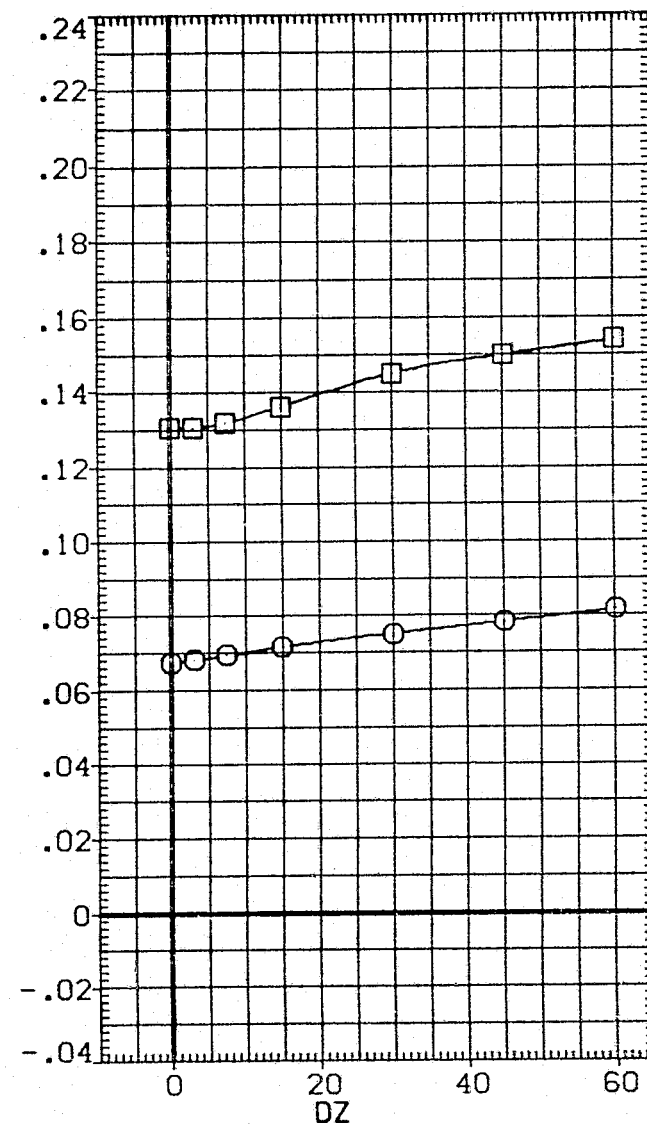
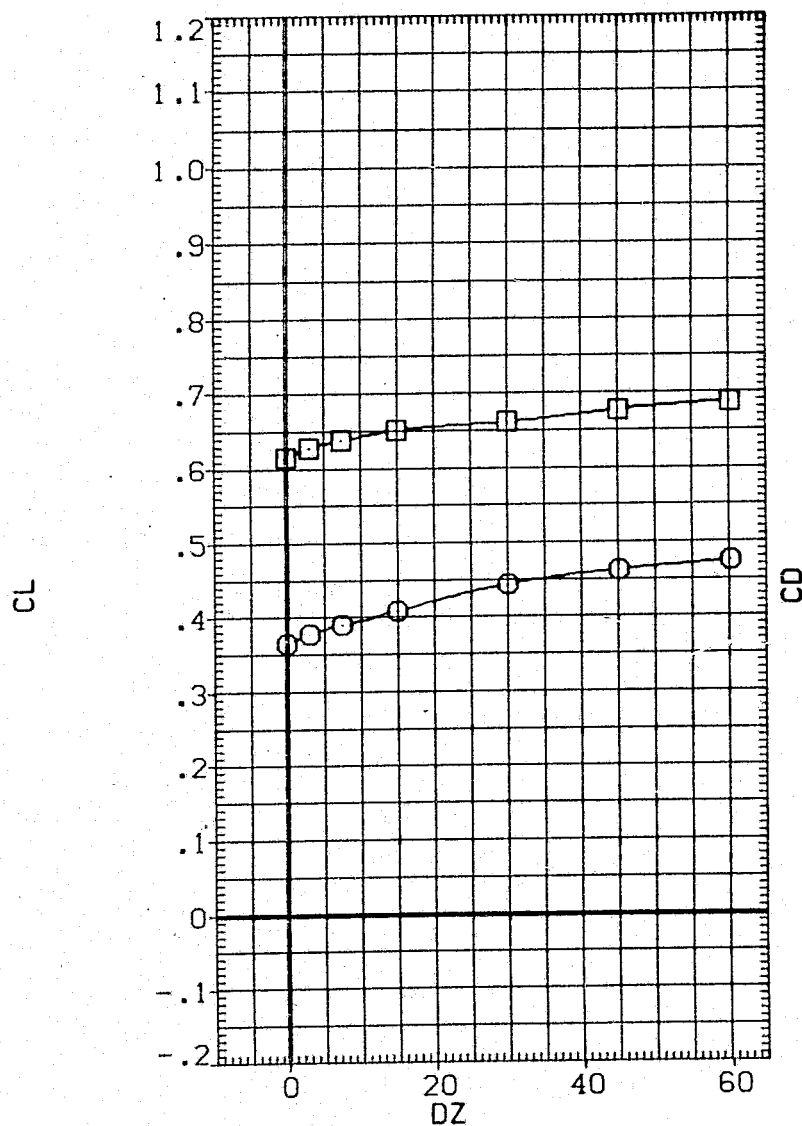


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-1B .000	ELV-0B 3.000
□	14.000	ELEVON 5.000	MACH .600
		BETA0 .000	BETAC -5.000
		PHI 7.500	DY 10.000
		DX 10.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

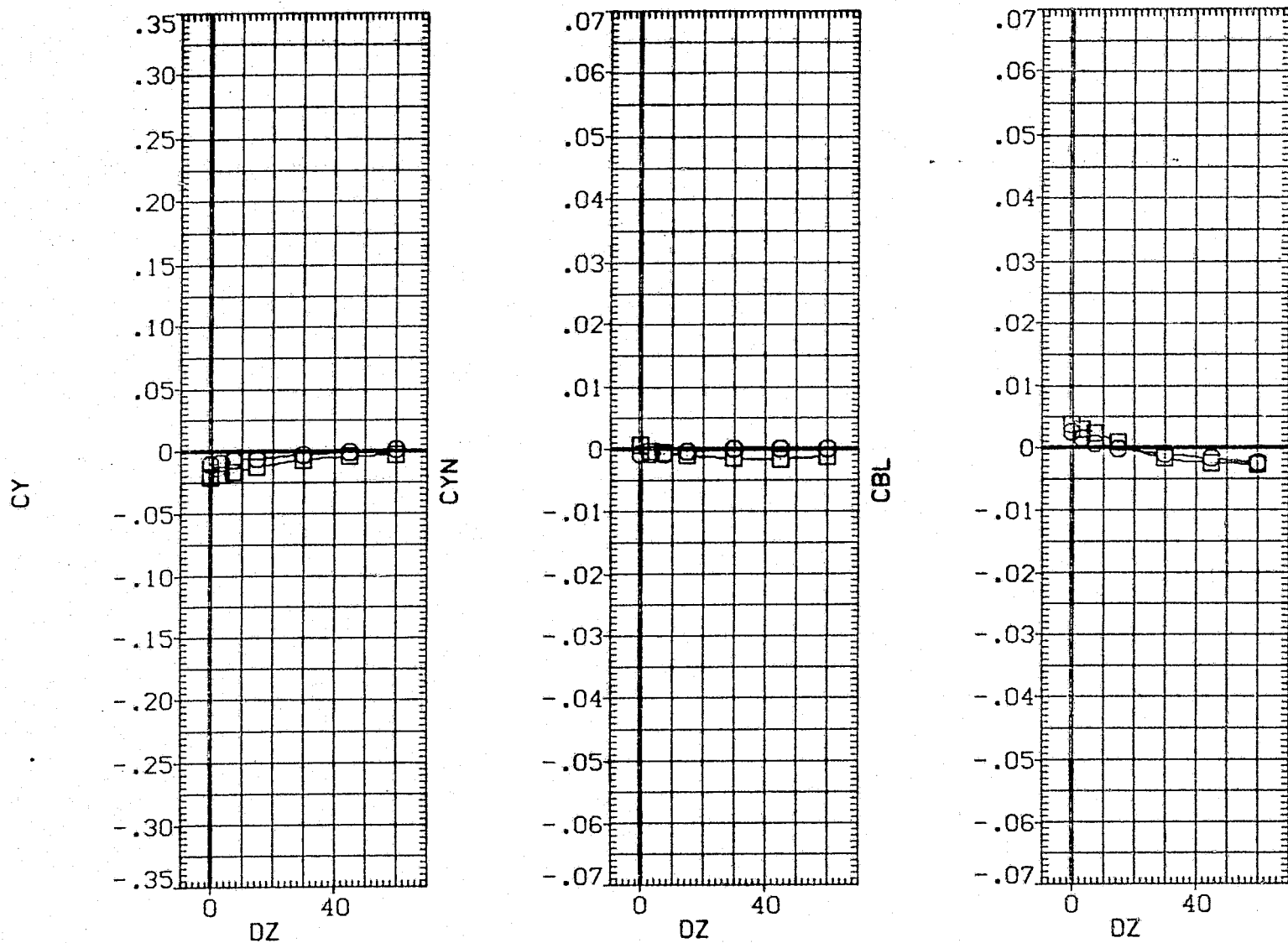


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (081 - 010)(VGN081)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

-5.000

ELV-IB

.000

ELV-OB

3.000

ELEVON

5.000

MACH

.600

PHI

7.500

DX

10.000

DY

10.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

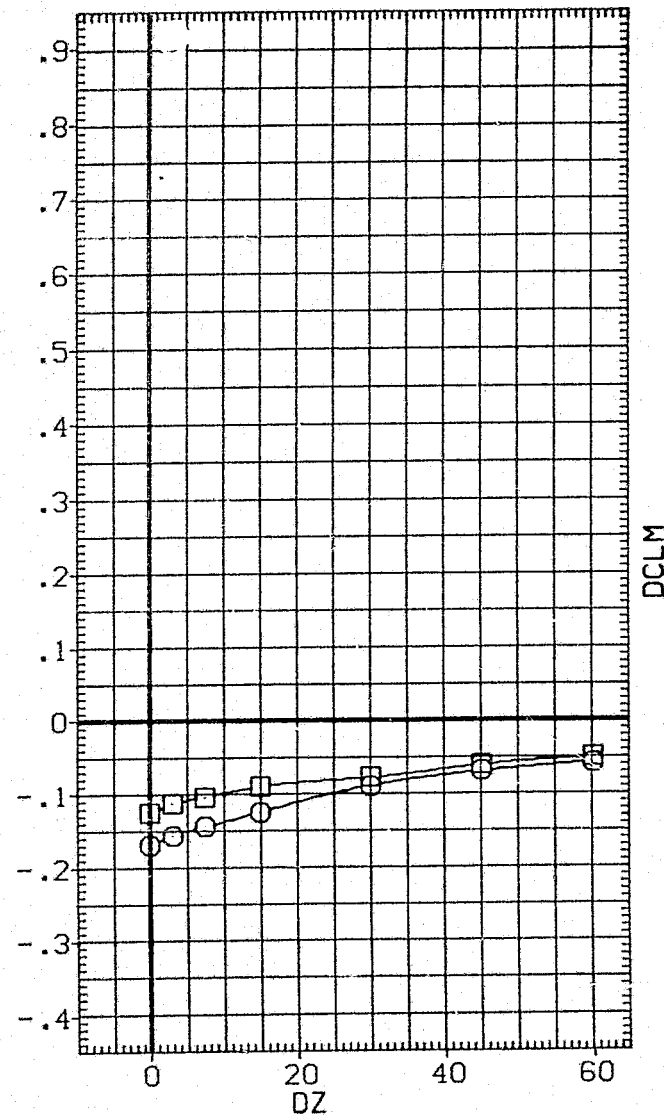
XMRP 1109.3000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

DCN



DCLM

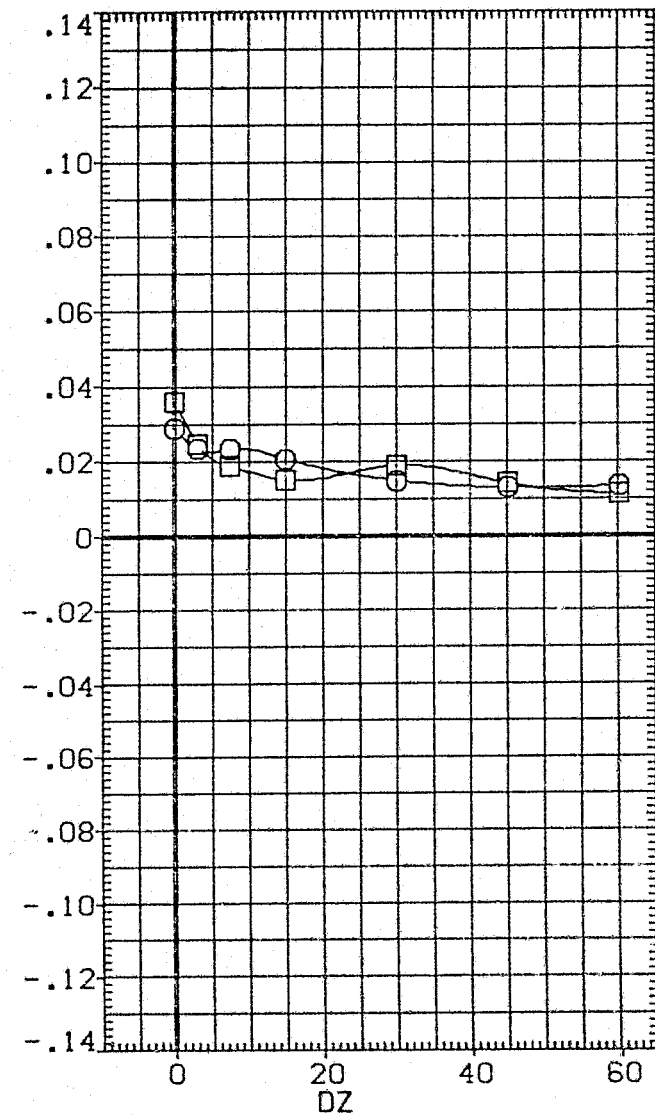


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (081 - 010) (VGN081)

SYMBOL

○
□

ALPHA0

10.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

-5.000

ELV-18

.000

ELV-08

3.000

ELEVON

5.000

MACH

.600

PHI

7.500

OX

10.000

DY

10.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000 50.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN.X0

YMRP .0000 IN.Y0

ZMRP 375.0000 IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

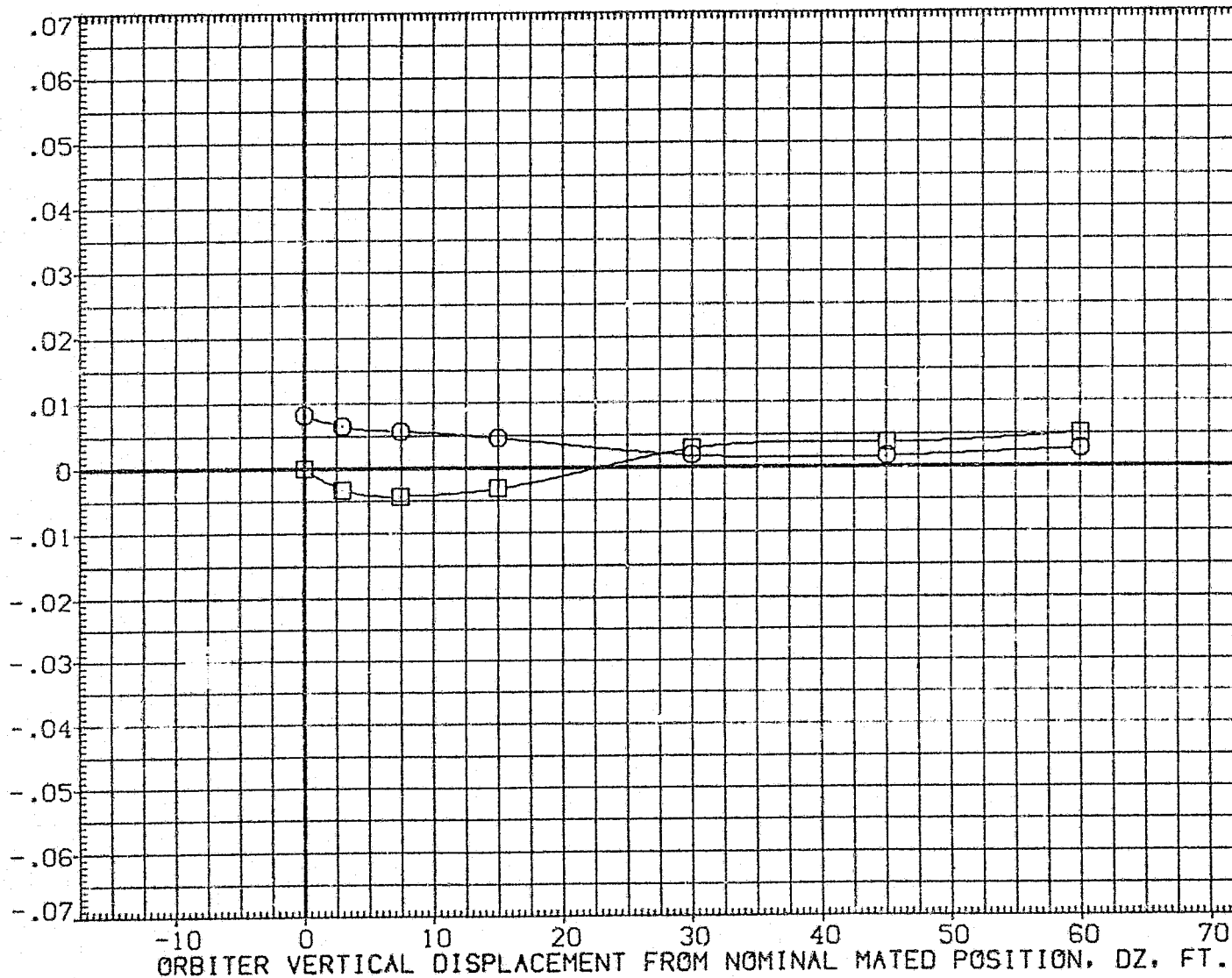


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (081 - 010)(VGN081)

SYMBOL



ALPHA0

10.000

14.000

ALPHA0

10.000

14.000

ALPHA0

10.000

14.000

PARAMETRIC VALUES

ALPHA0

10.000

14.000

ALPHA0

10.000

14.000

BETAC

-5.000

BETAC

-5.000

BETAC

-5.000

BETAC

-5.000

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REFERENCE INFORMATION

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2690.0000

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

IN.Z0

IN.Z0

IN.Z0

IN.Z0

IN.Z0

IN.Z0

IN.Z0

IN.Z0

IN.Z0

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IN.Z0

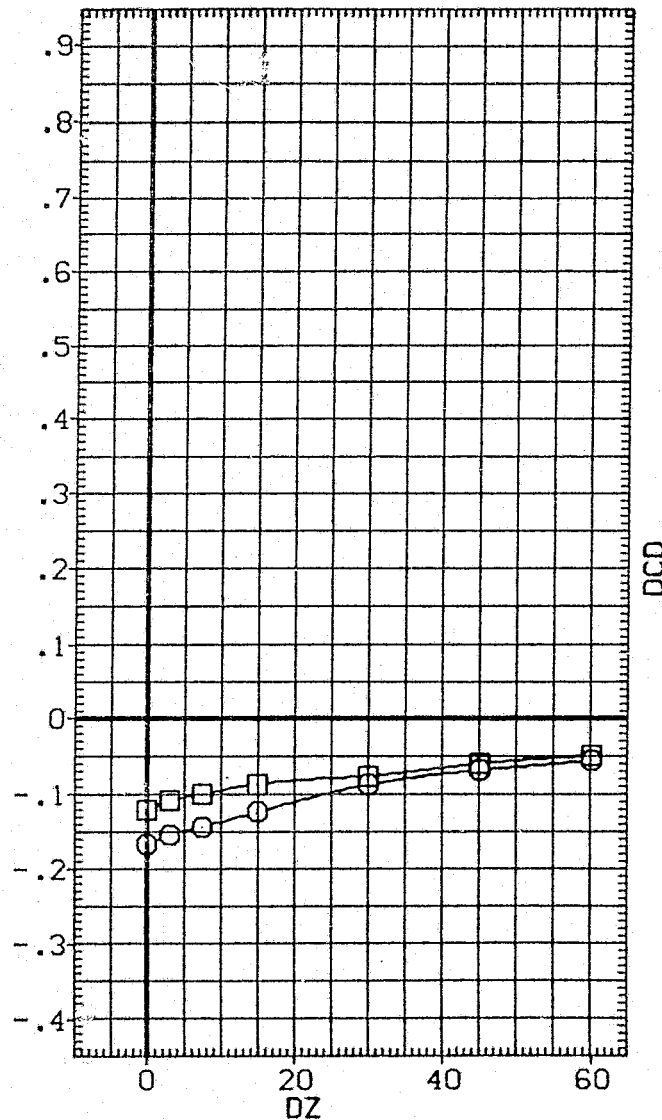
IN.Z0

IN.Z0

IN.Z0

IN.Z0

DCL



DCD

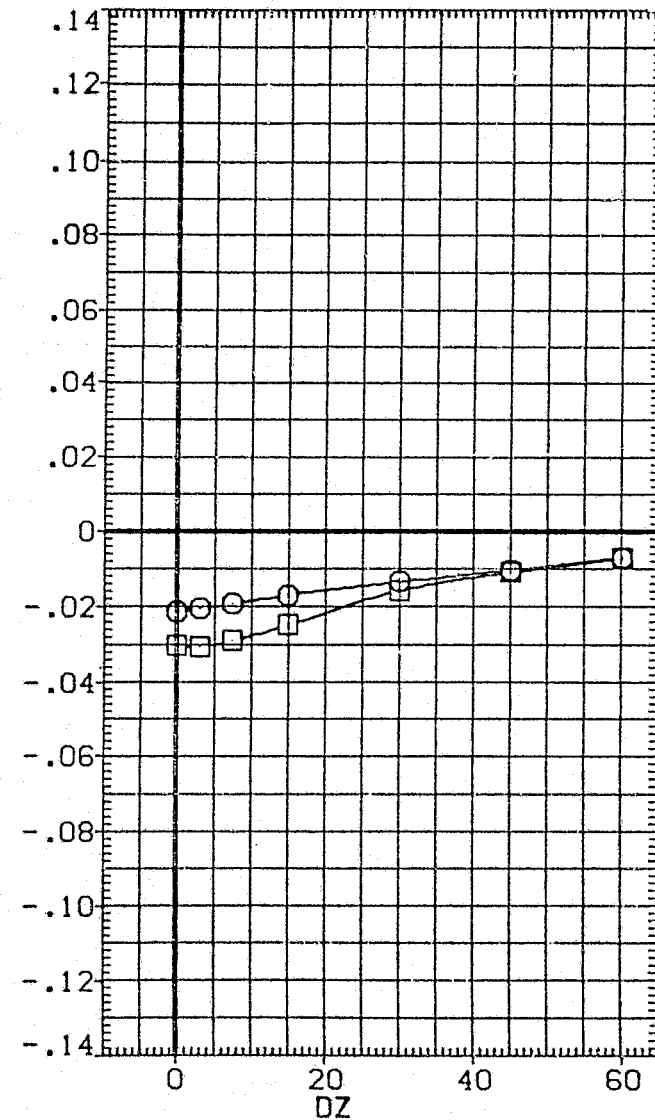


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	
○	10.000	ELEVON	.000	MACH	3.000
□	14.000	BETA0	5.000	BETAC	.600
		PHI	.000	DY	-5.000
		DX	7.500	ALPHAC	10.000
			10.000		8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

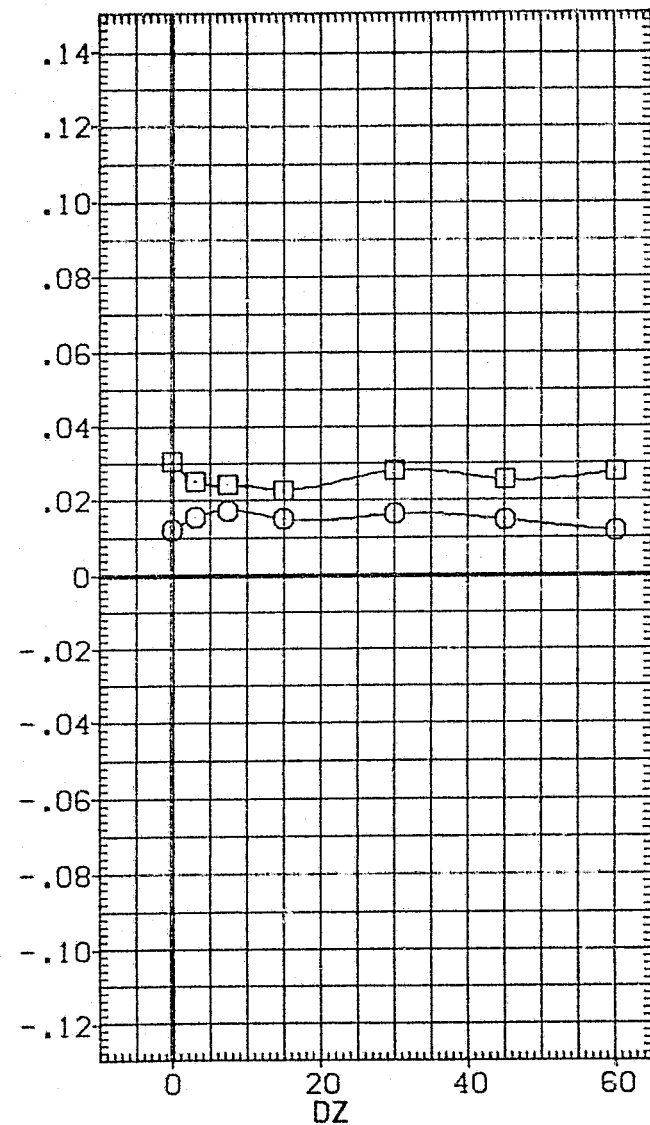
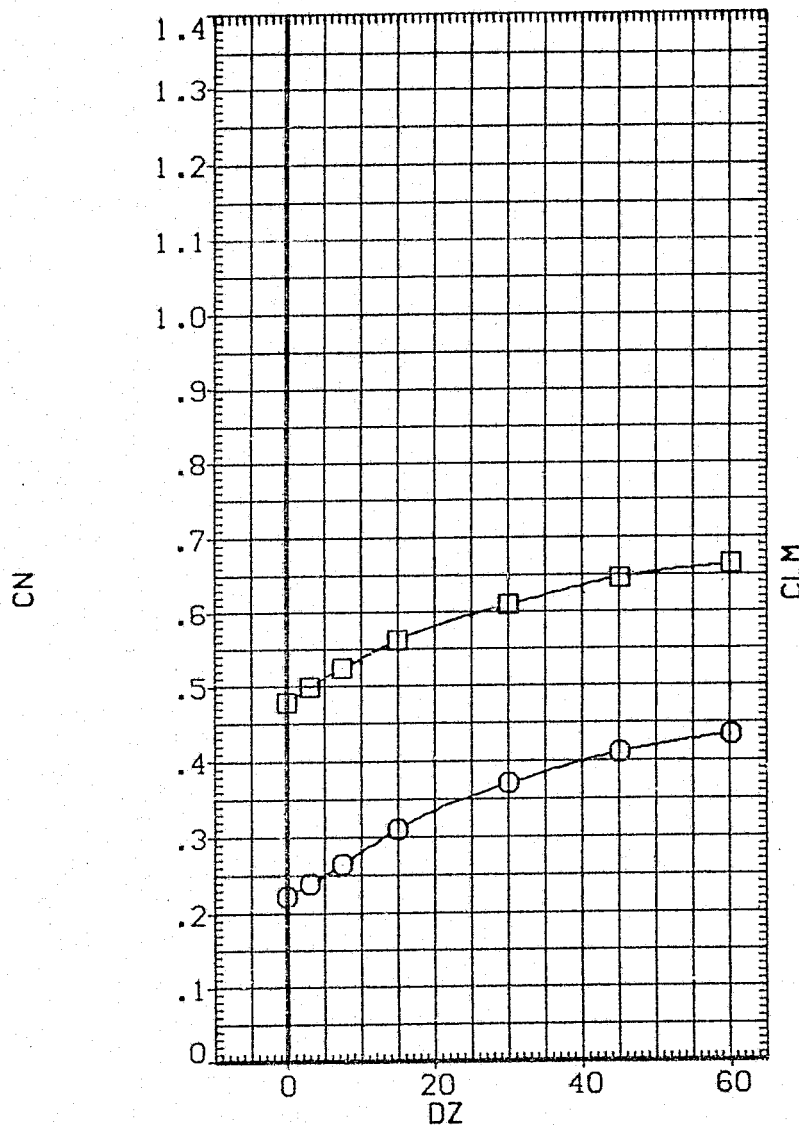


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN083)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

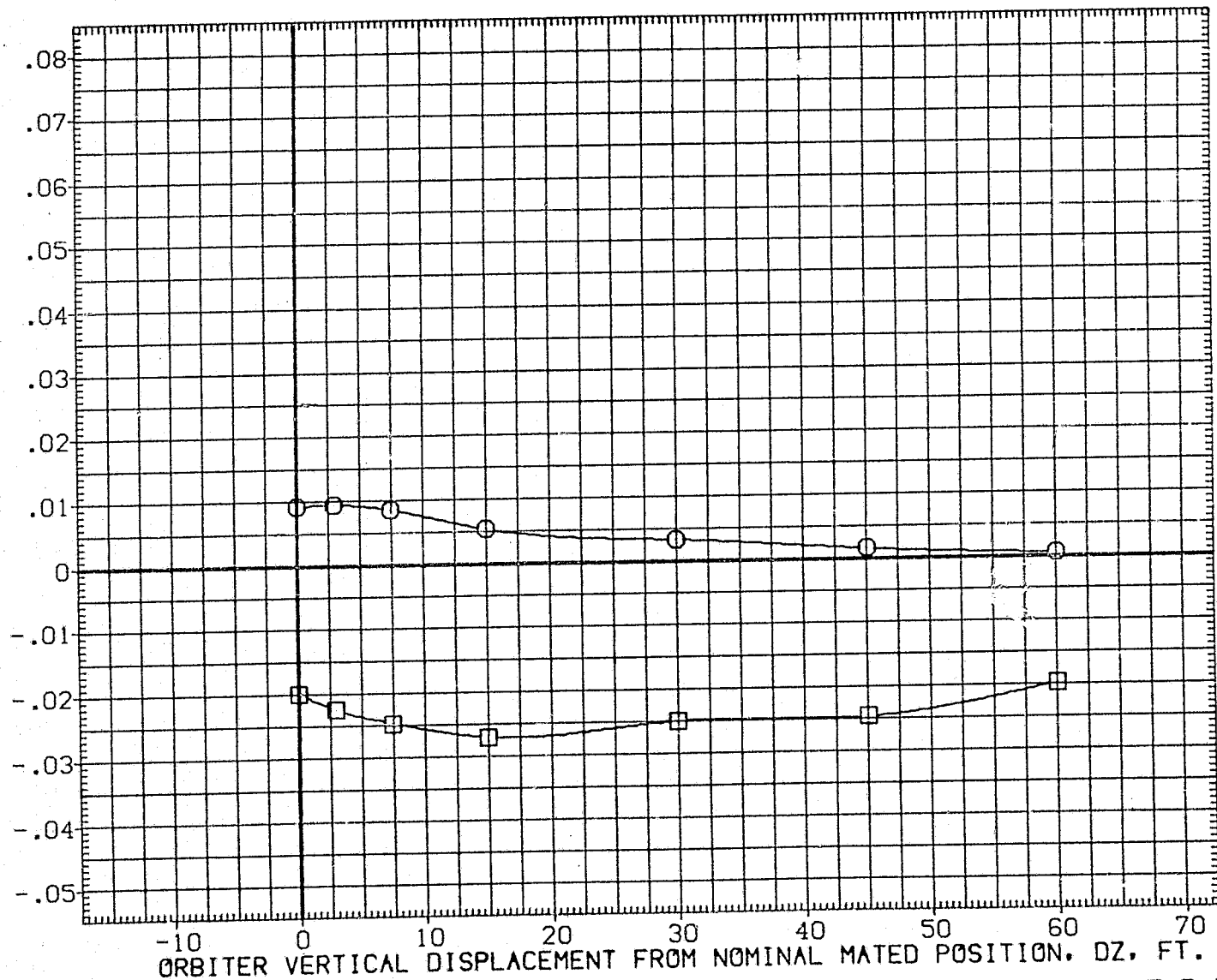


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN083)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	-5.000
		PHI	7.500	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

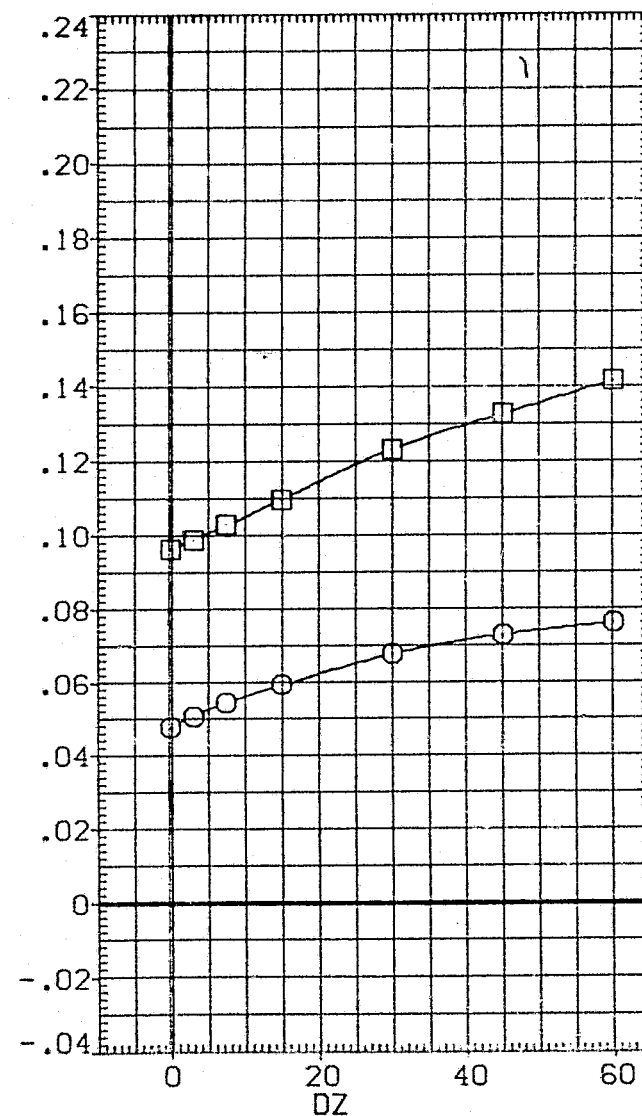
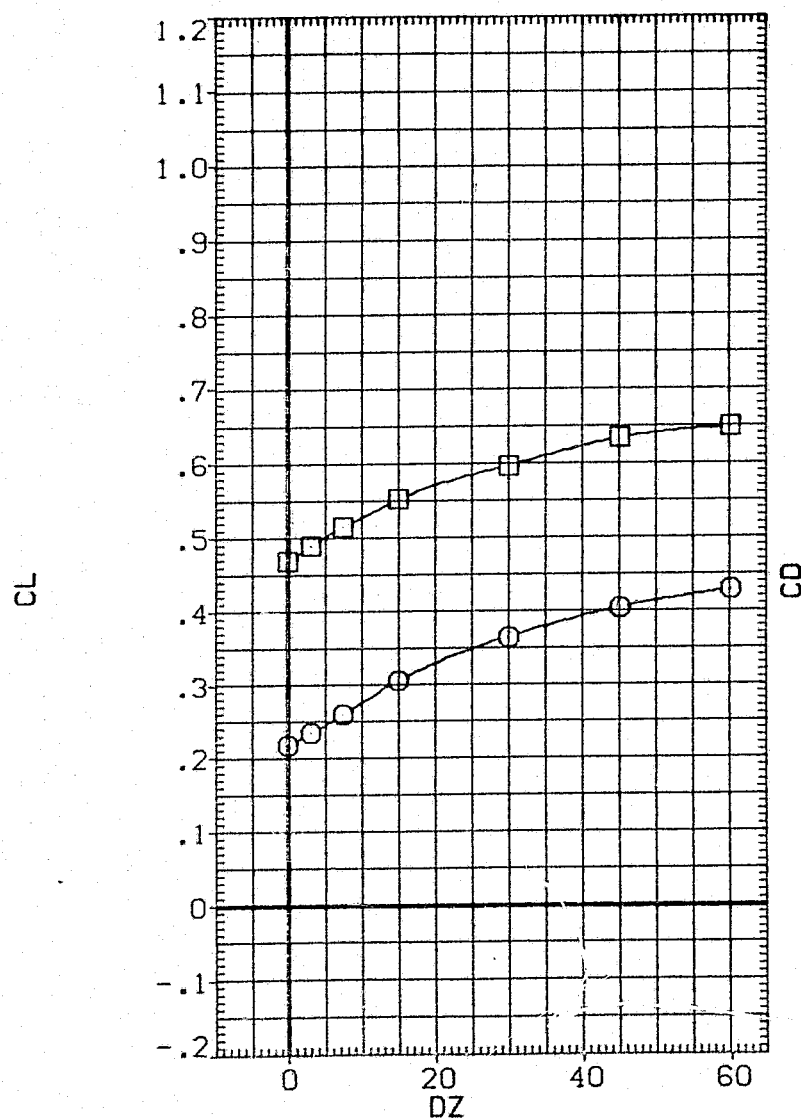


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN083)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC -5.000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.8600	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

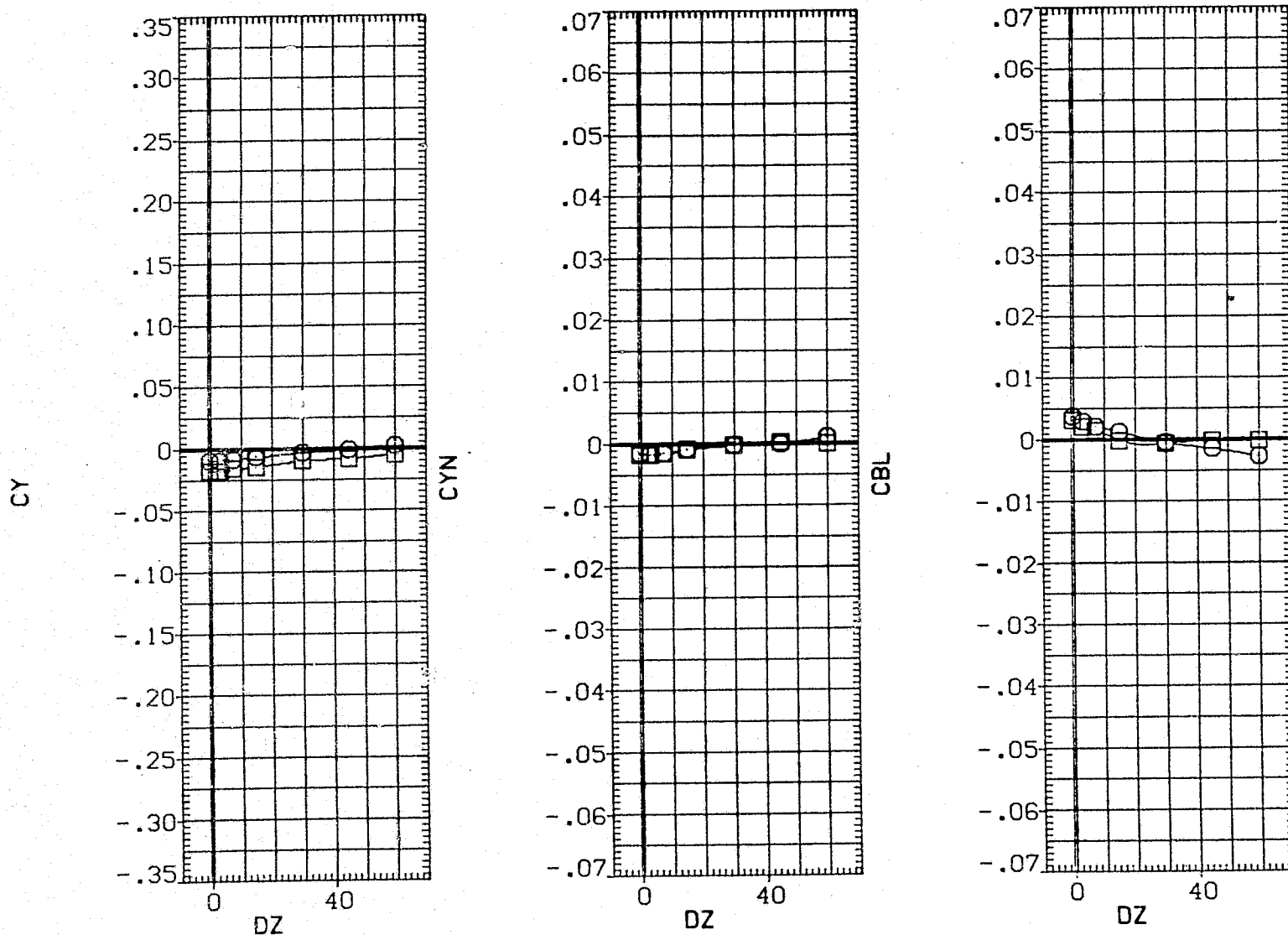


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (083 - 010) (VGN083)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	-5.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	HACH	.600
		PHI	7.500	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMMP	1109.0000	IN.X0
YMMP	.0000	IN.Y0
ZMMP	375.0000	IN.Z0
SCALE	.0300	

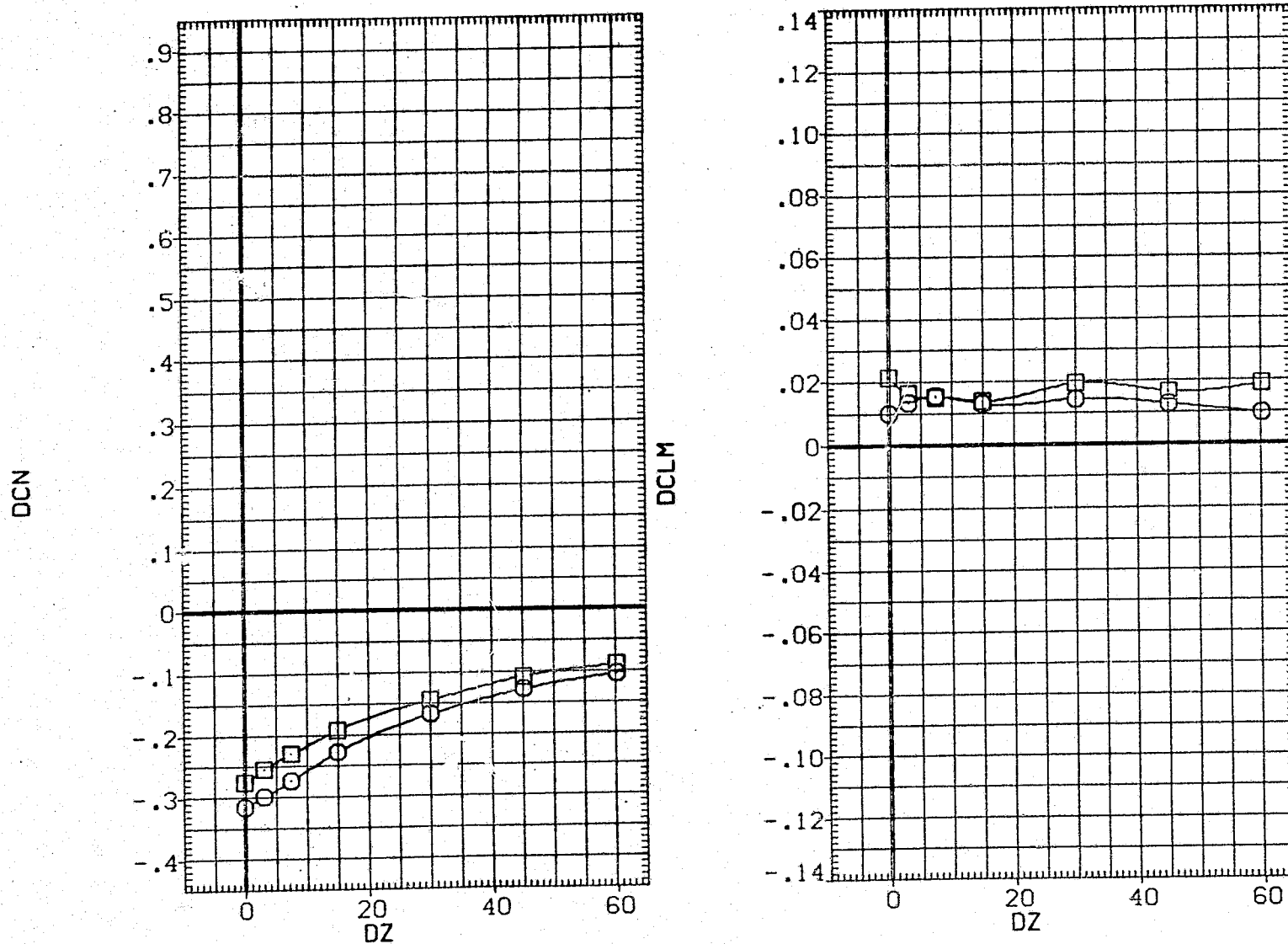


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (083 - 010)(VGN083)

SYMBOL
○
□

ALPHA0
10.000
14.000

ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000	BETAC	-5.000
.000	ELV-0B	3.000
5.000	MACH	.600
7.500	DX	10.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	36.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

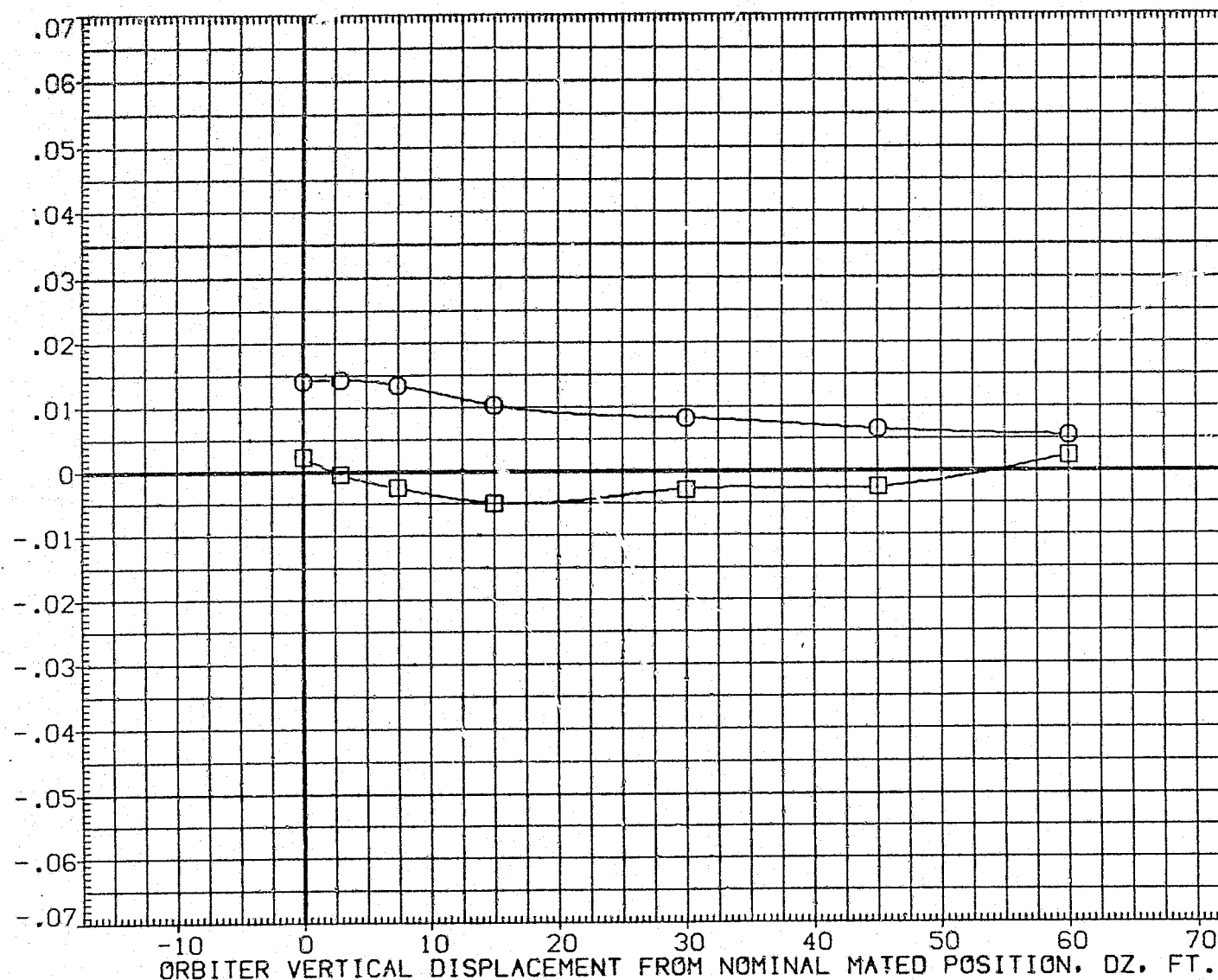


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (083 - 010)(VGN083)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

7.500

10.000

BETAC

ELV-0B

MACH

DX

BETA0

-5.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

50.FT.

IN.

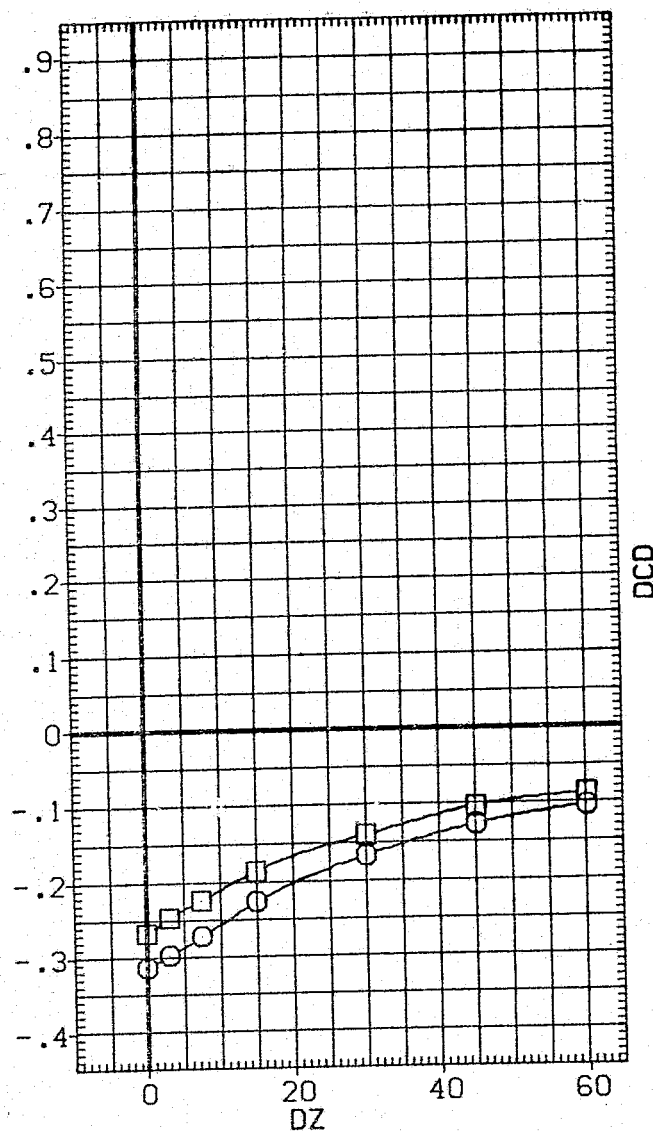
IN.

IN.X0

IN.Y0

IN.Z0

DCL



DCD

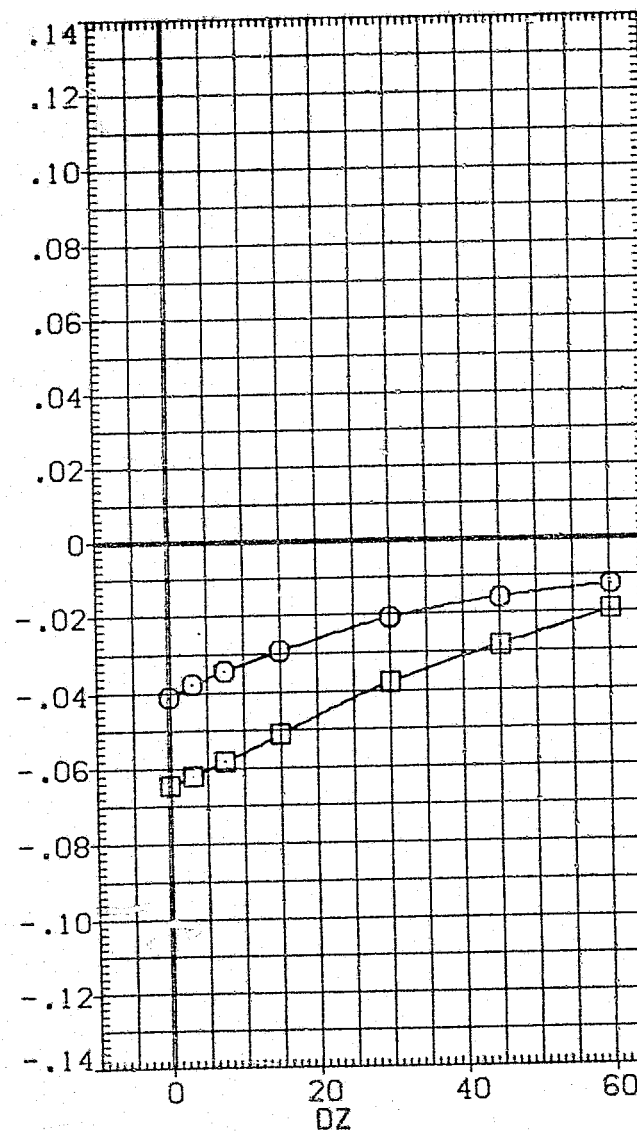


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

PAGE 1230

CA20 747/1 01 S1

ORBITER DATA (NGN084)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	.000	MACH	3.000
□	14.000	5.000	BETAC	.600
		.000	DY	.000
		7.500	ALPHAC	4.000
		.000		

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

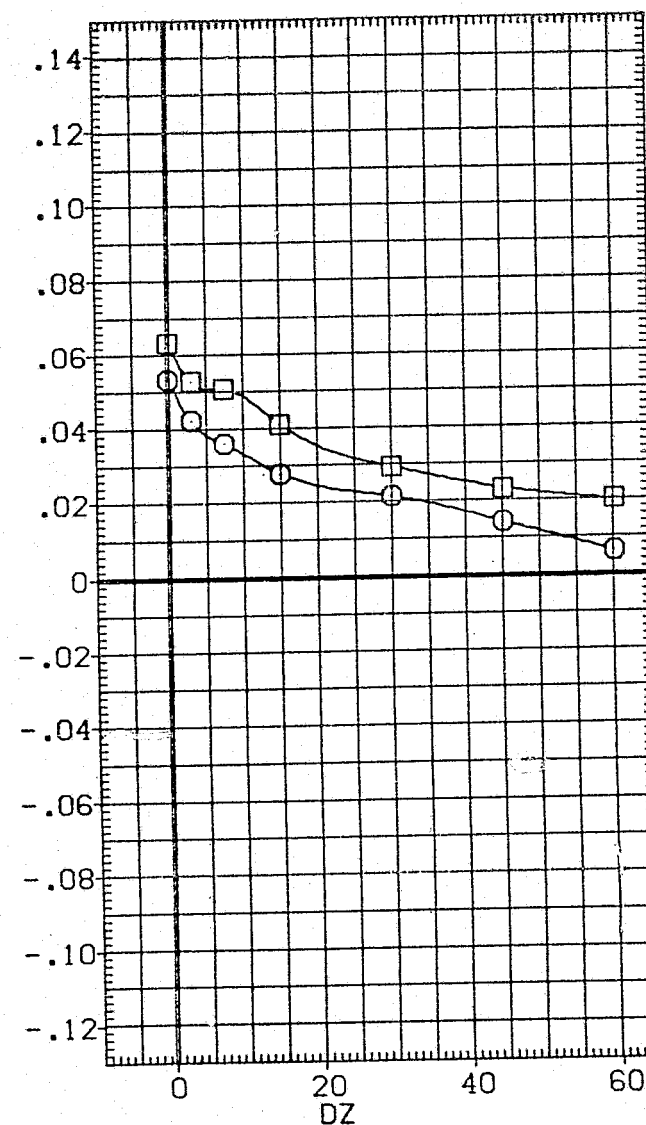
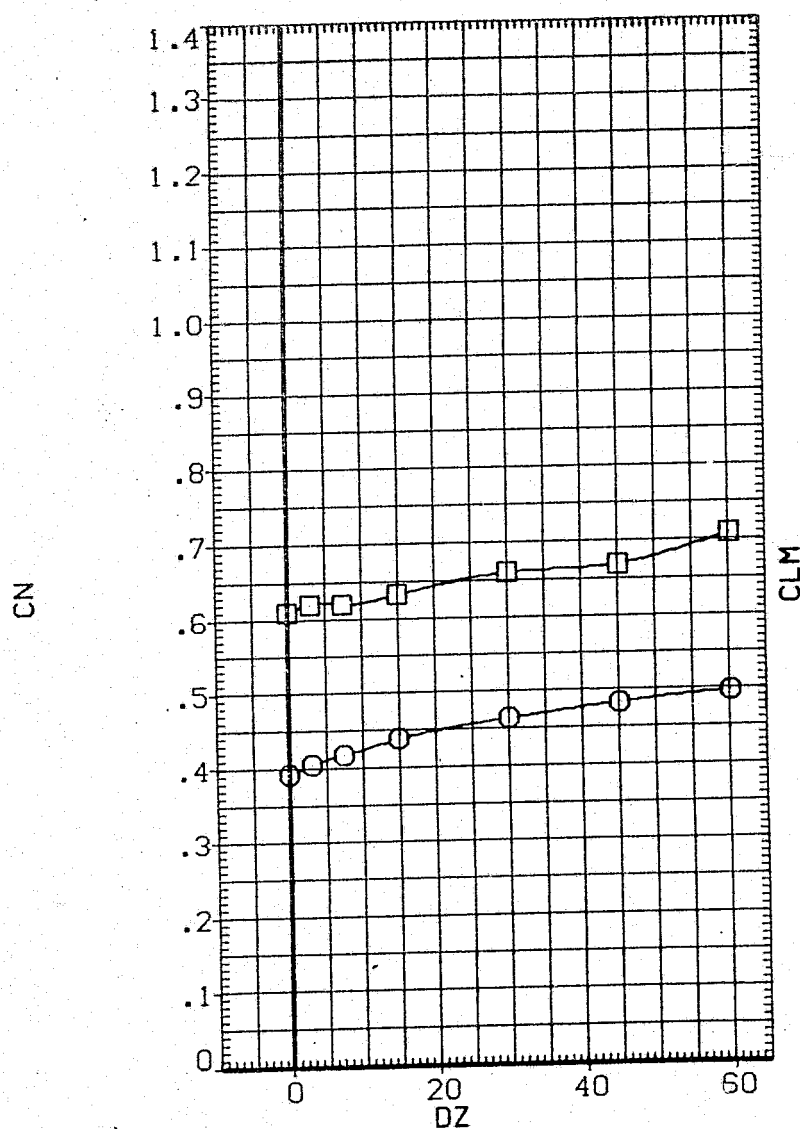


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN084)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEV0N	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	7.500	DY	.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

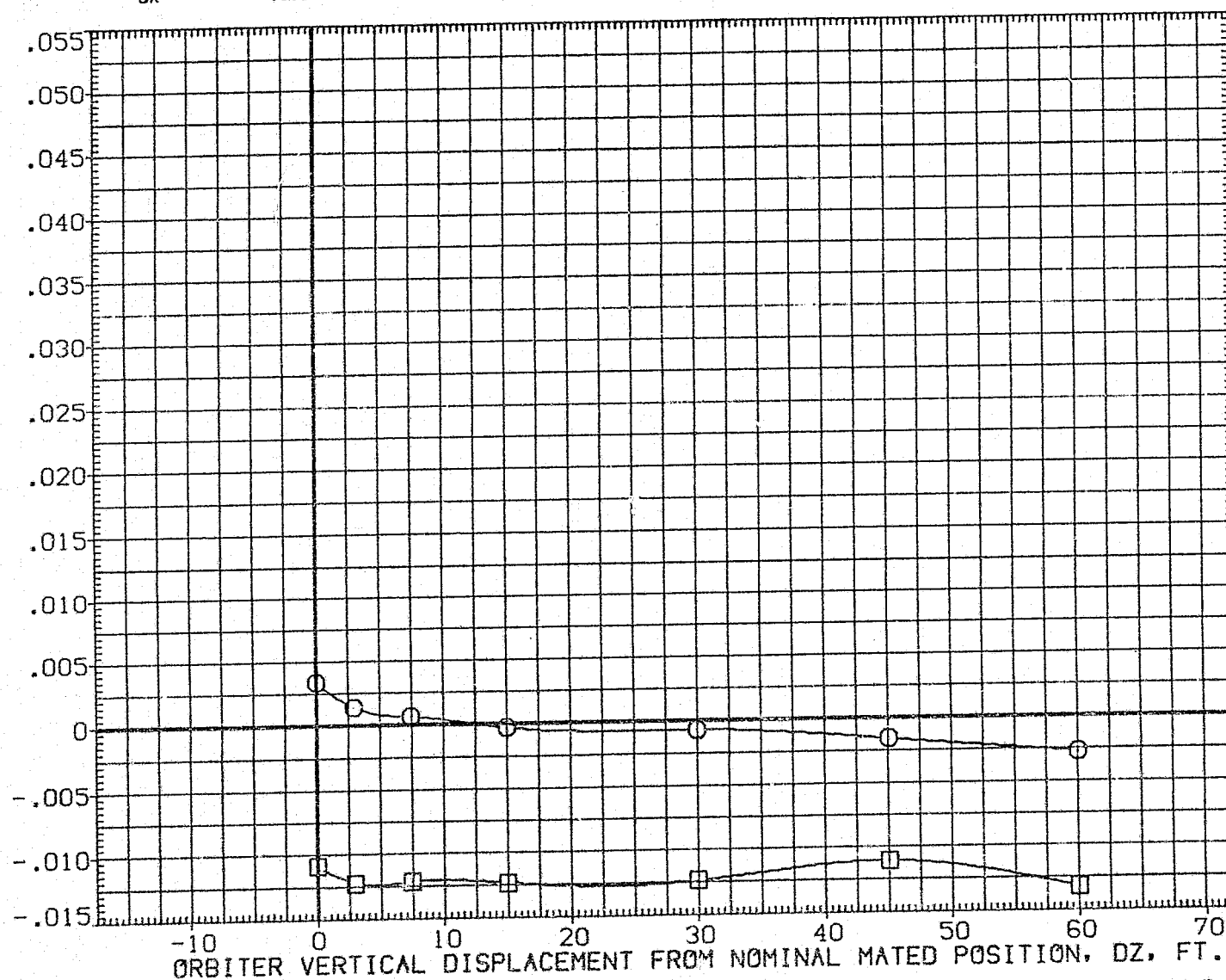


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN084)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-09	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	7.500	DY	.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

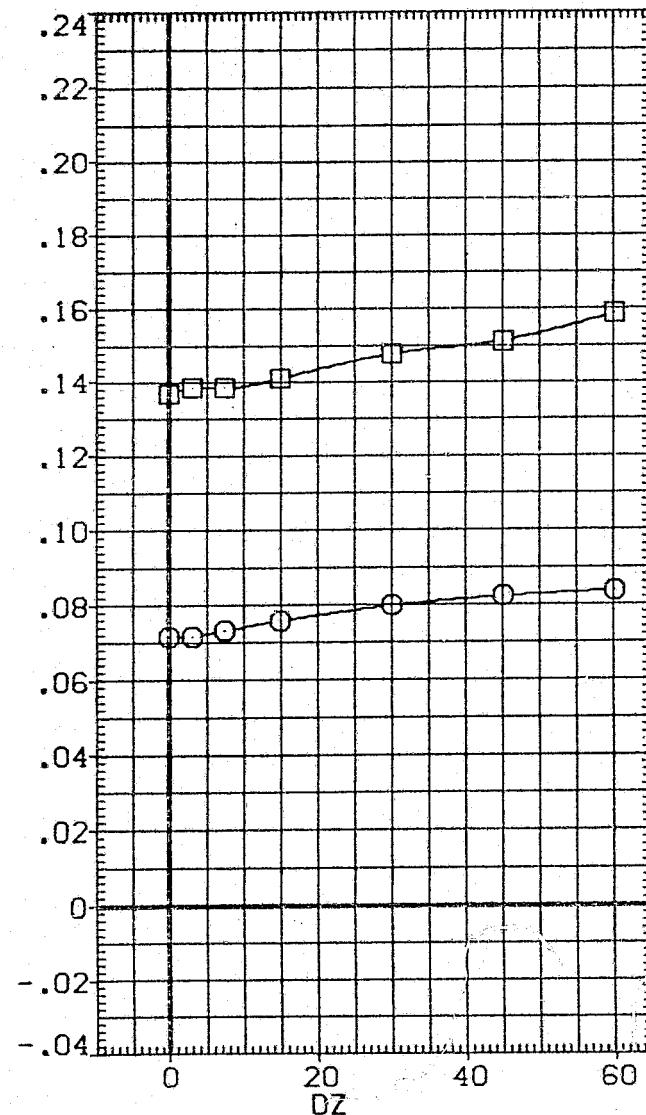
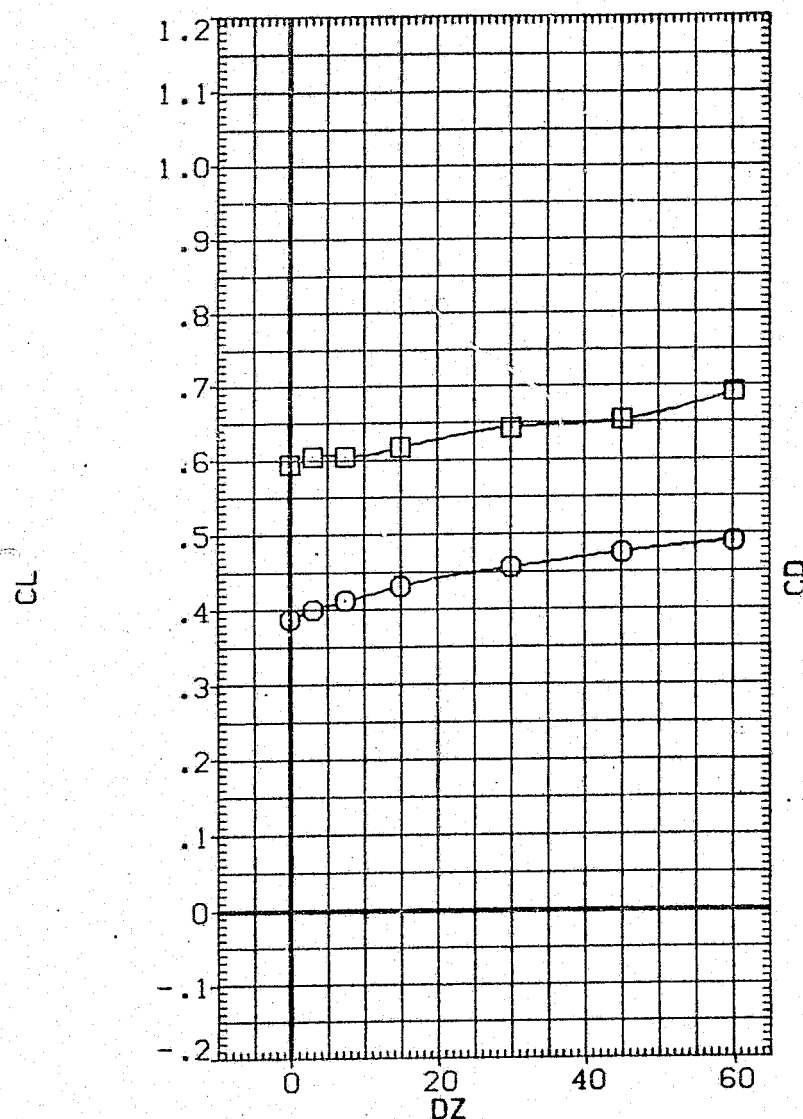


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL



ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

7.500

.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

.000

.000

4.000

REFERENCE INFORMATION

SREF 2697.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

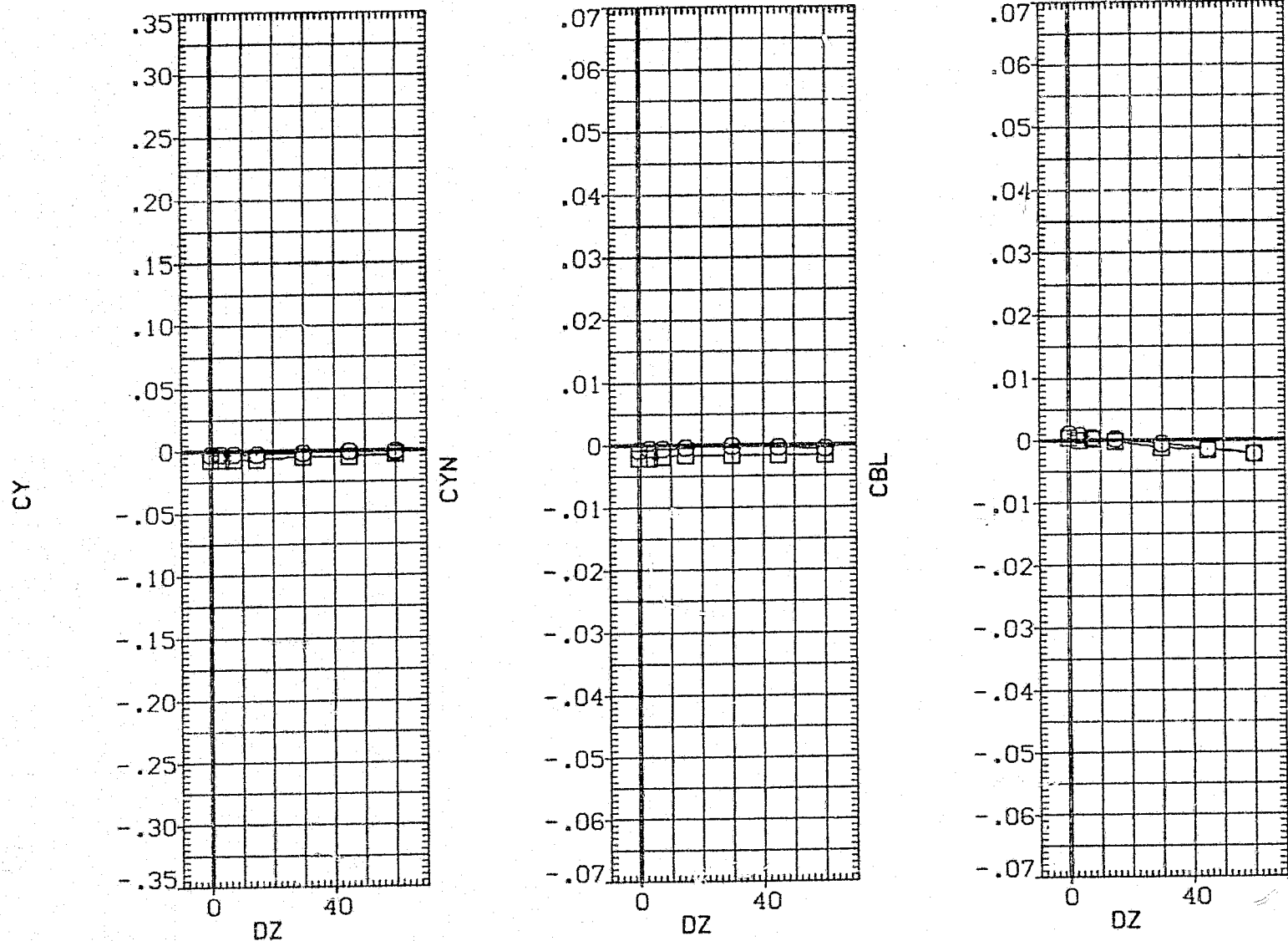


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) . D/S (084 - 010) (VGN084)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

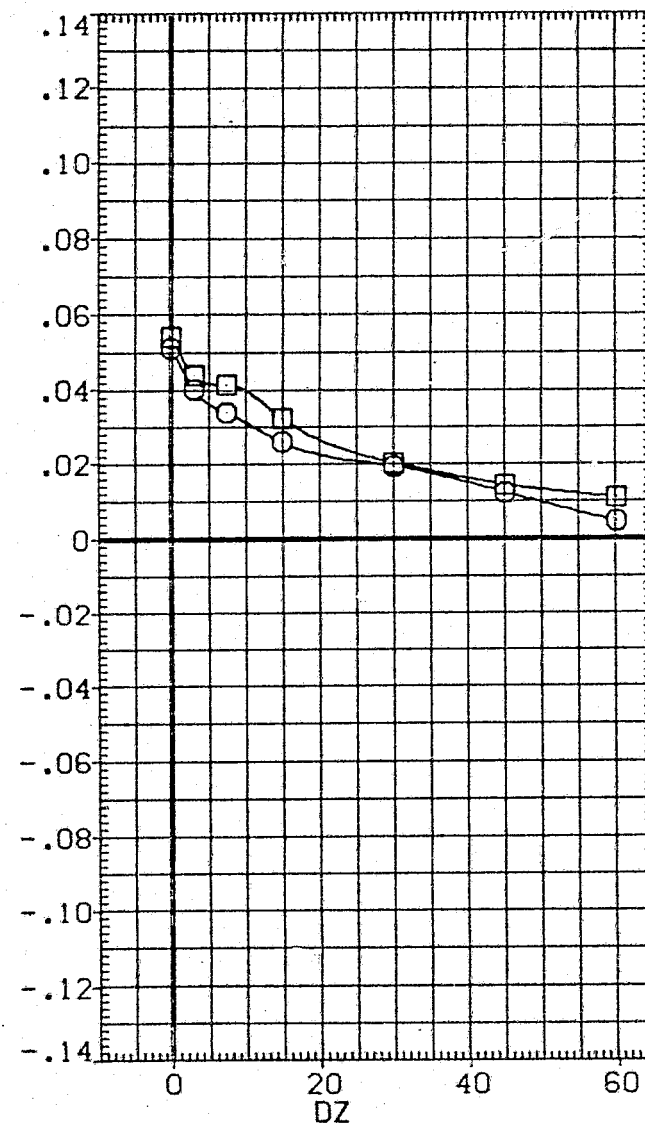
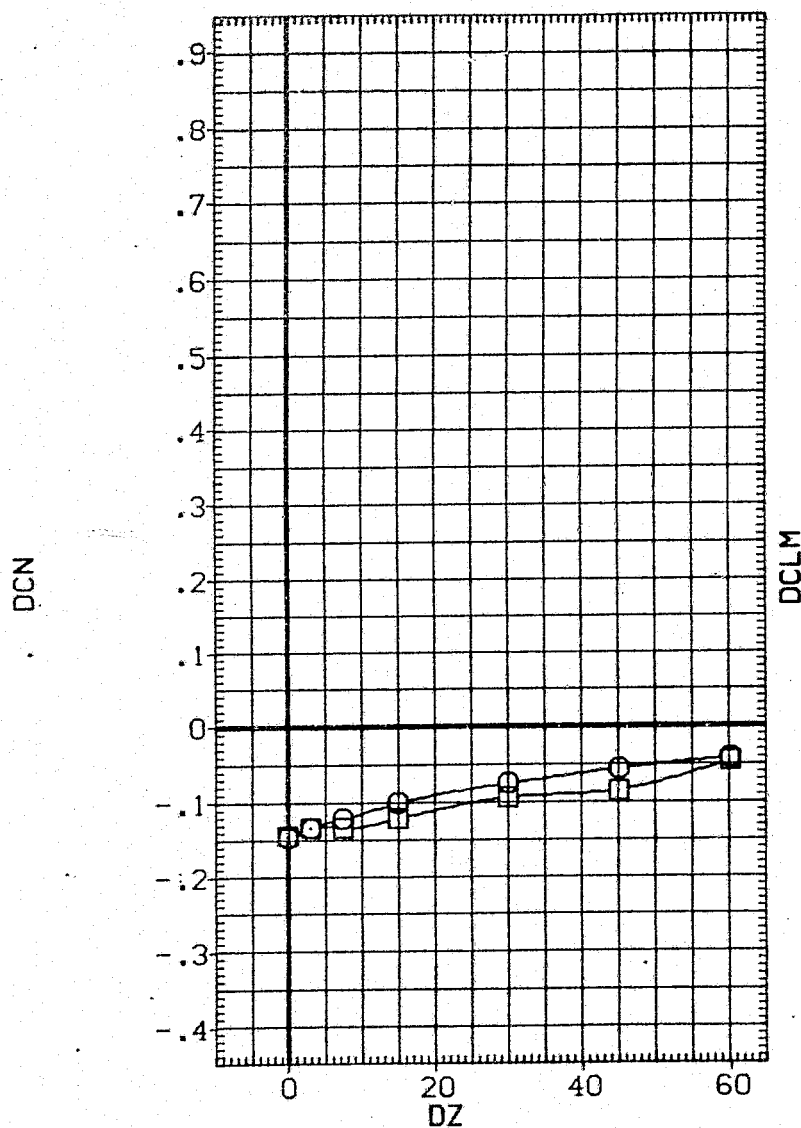


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-IB .000 ELV-OB 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY .000 BETAO .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

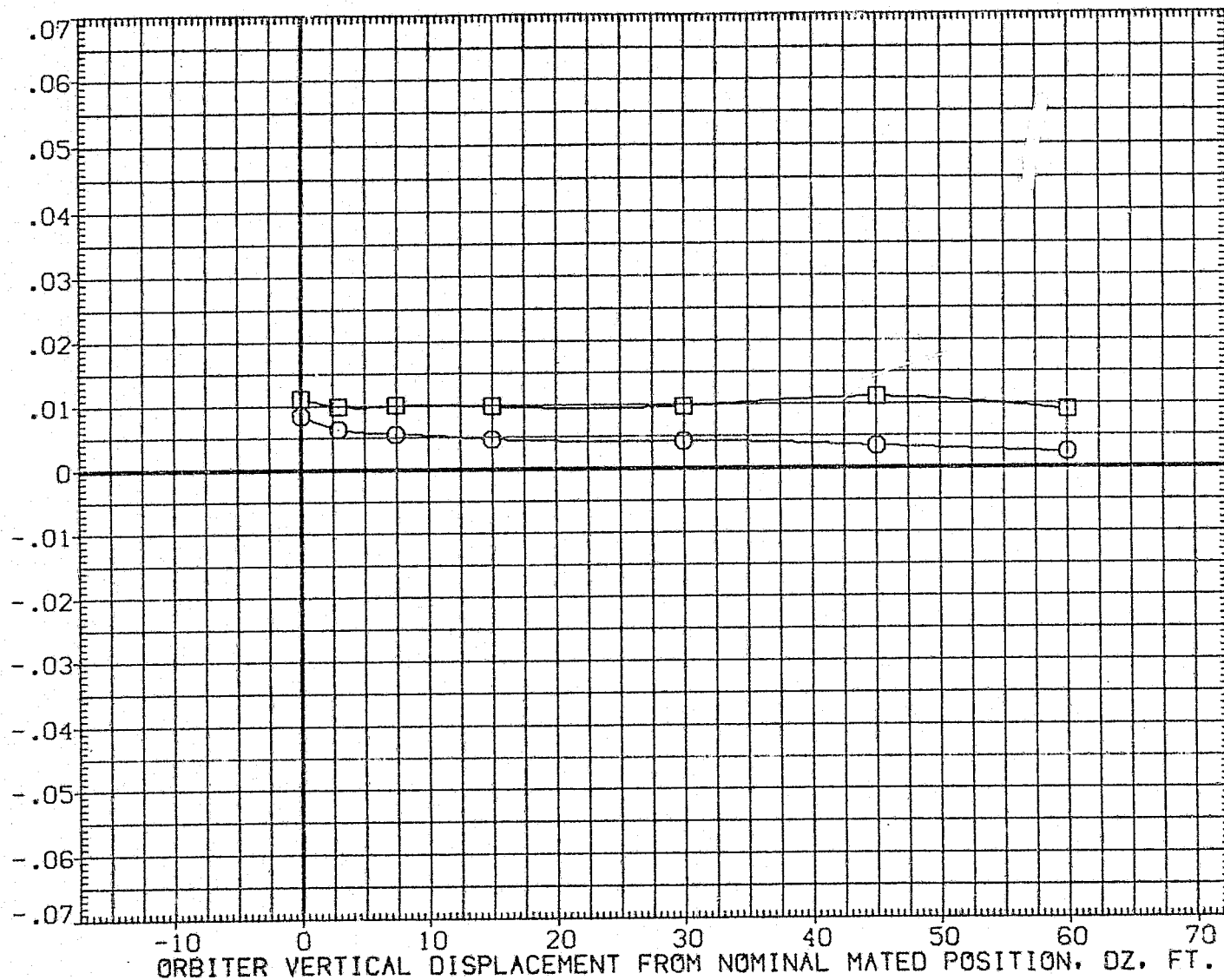


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (084 - 010) (VGN084)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX .000
		DY .000 BETA0 .000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

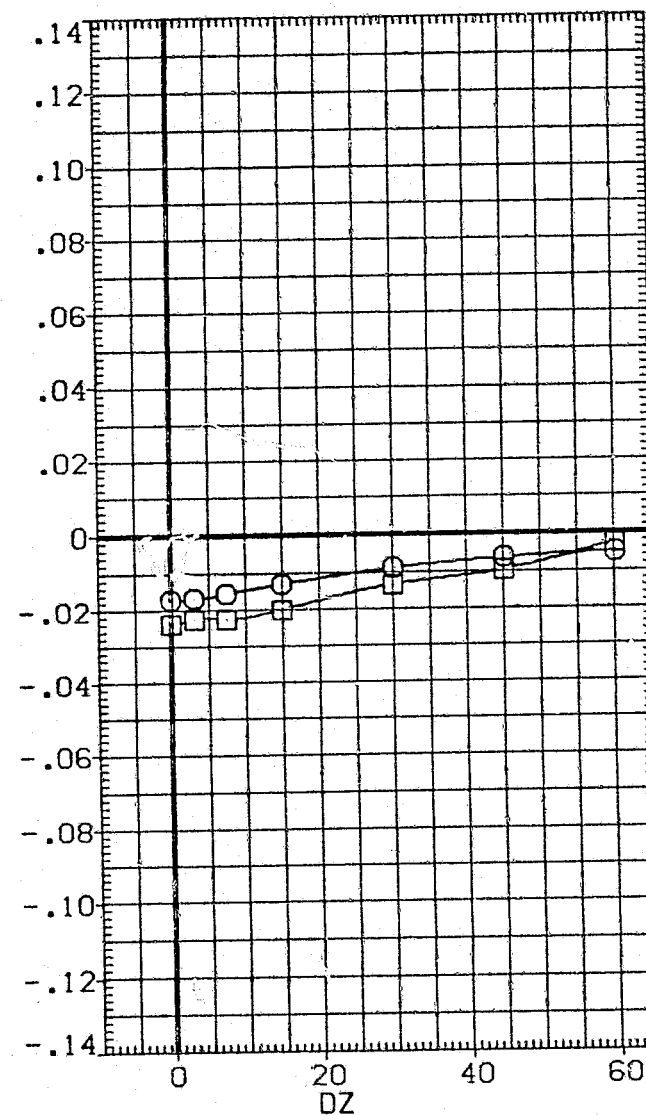
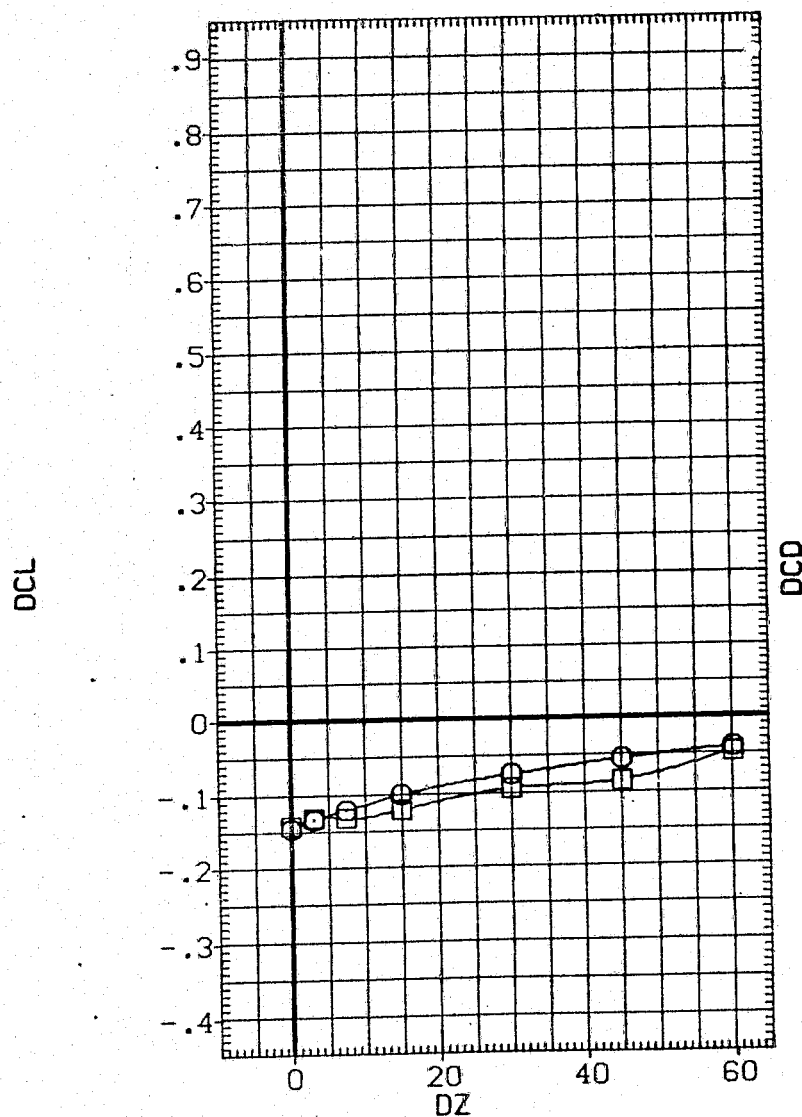


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETAD .000 BETAC .000
		PHI 7.500 DY .000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

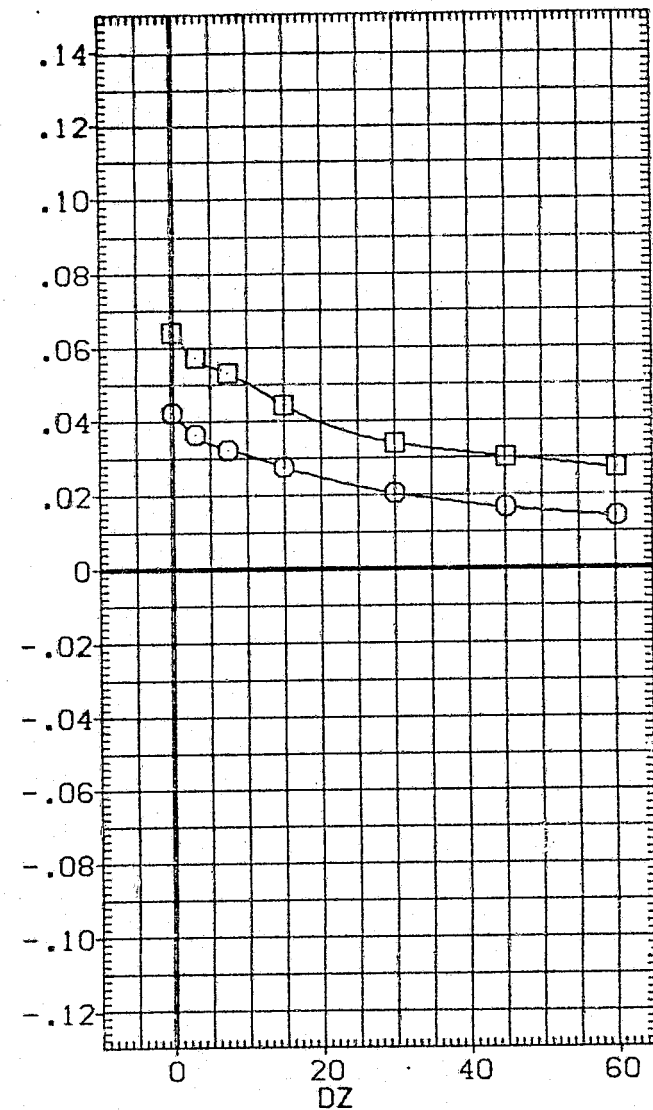
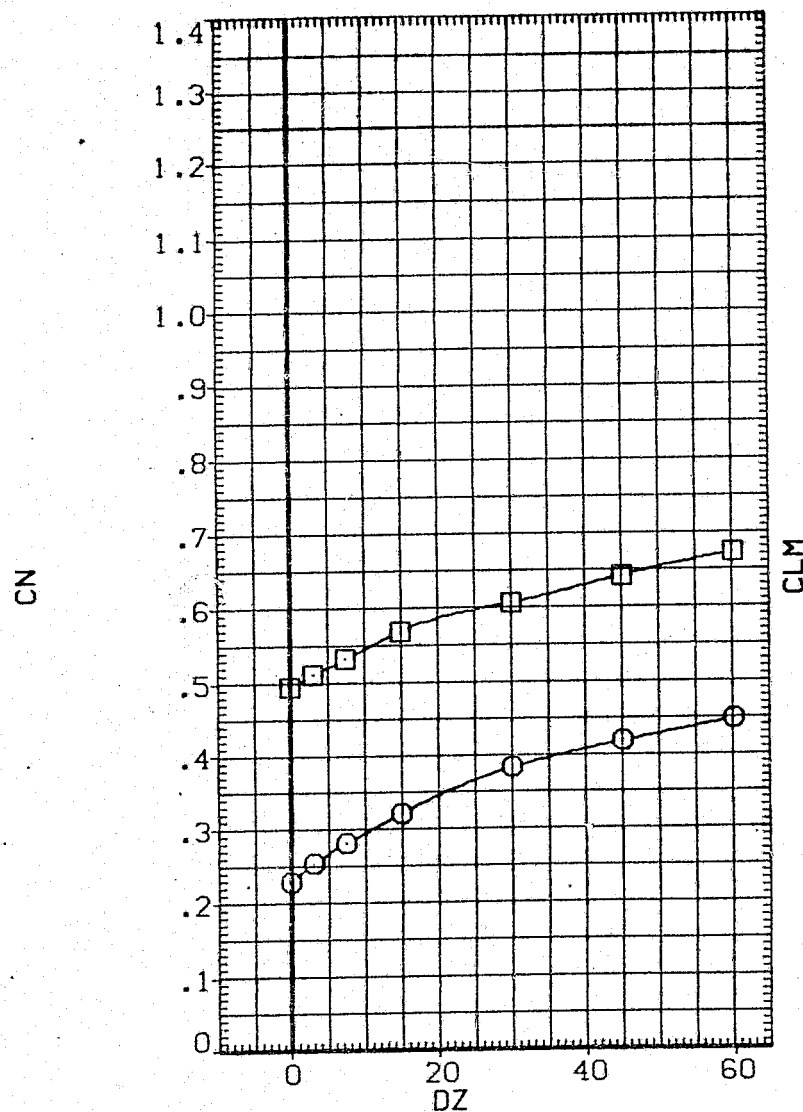


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN086)

SYMBOL		PARAMETRIC VALUES				
○	ALP-A0	10.000	ELV-1B	.000	ELV-8B	3.000
□	14.000	ELEVON	5.000	MACH	.600	
		BETA0	.000	BETAC	.000	
		PHI	7.500	DY	.000	
		DX	.000	ALPHAC	8.000	

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA



FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
	BETA0 .000	BETAC .000
	PHI 7.500	DY .000
	DX .000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

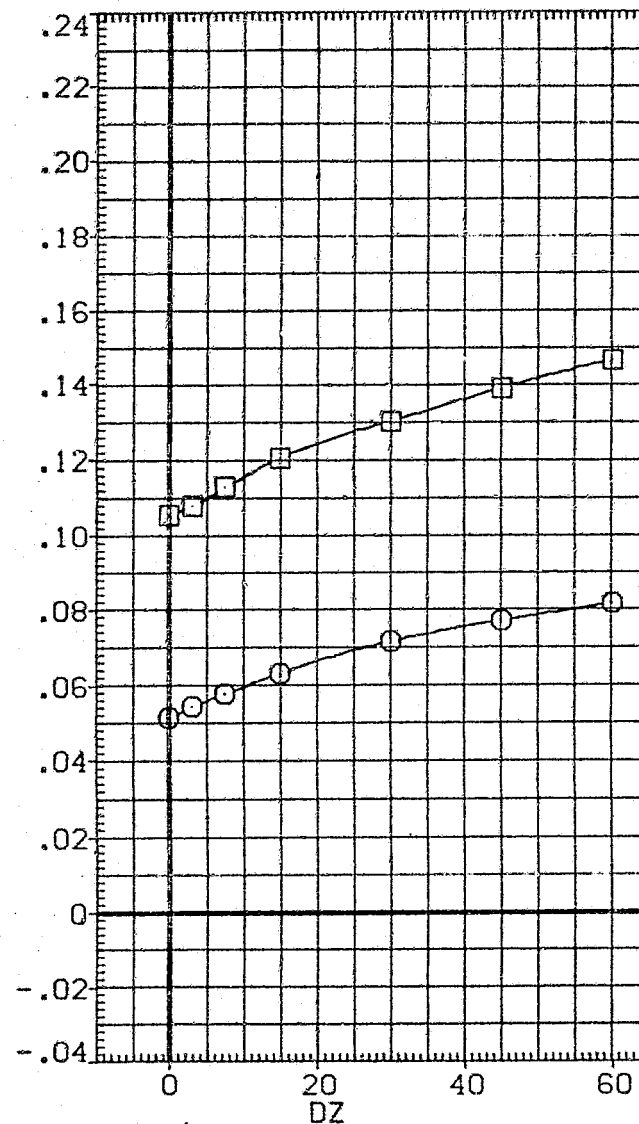
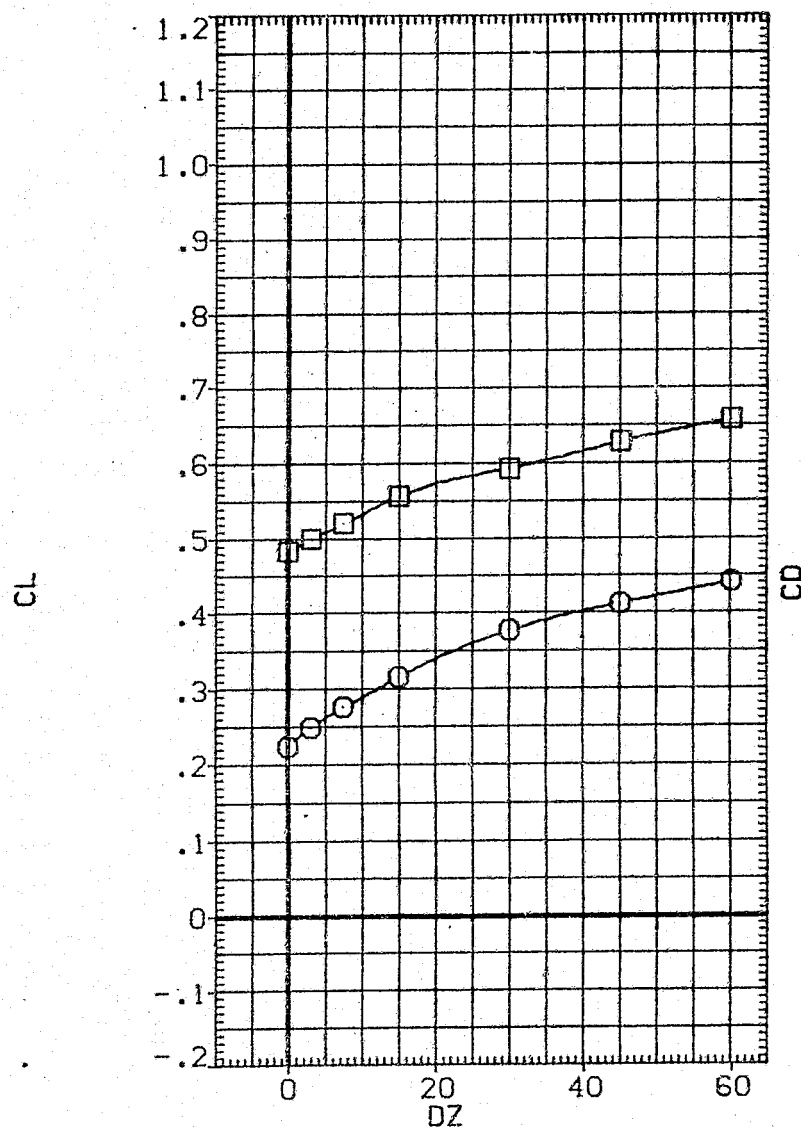


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN086)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI 7.500 DY .000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

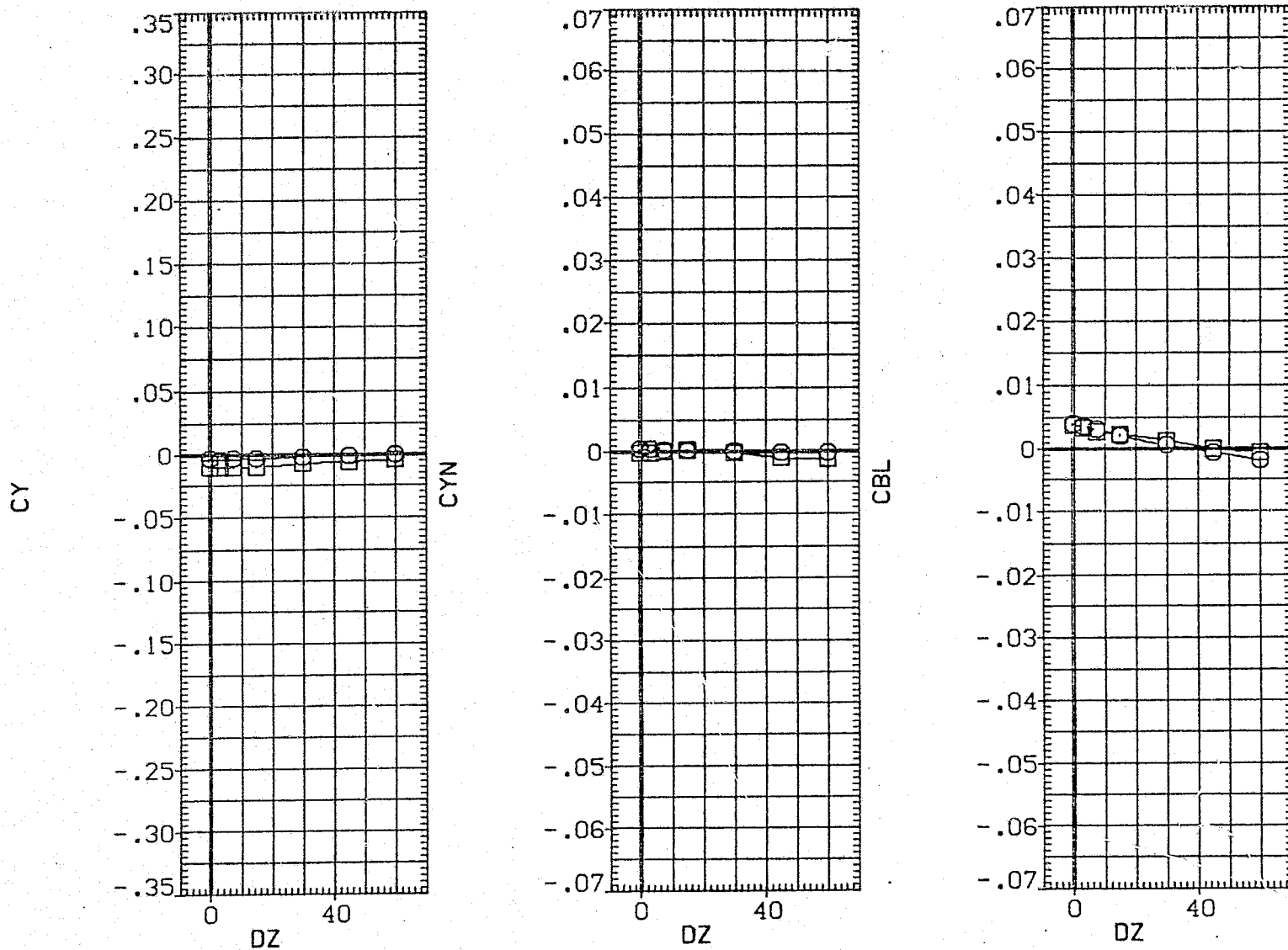


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 8.000	BETAC .000
□	14.000	ELV-1B .000	ELV-0B 3.000
		ELEVON 5.063	MACH .600
		PHI 7.500	DX .000
		DY .000	BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

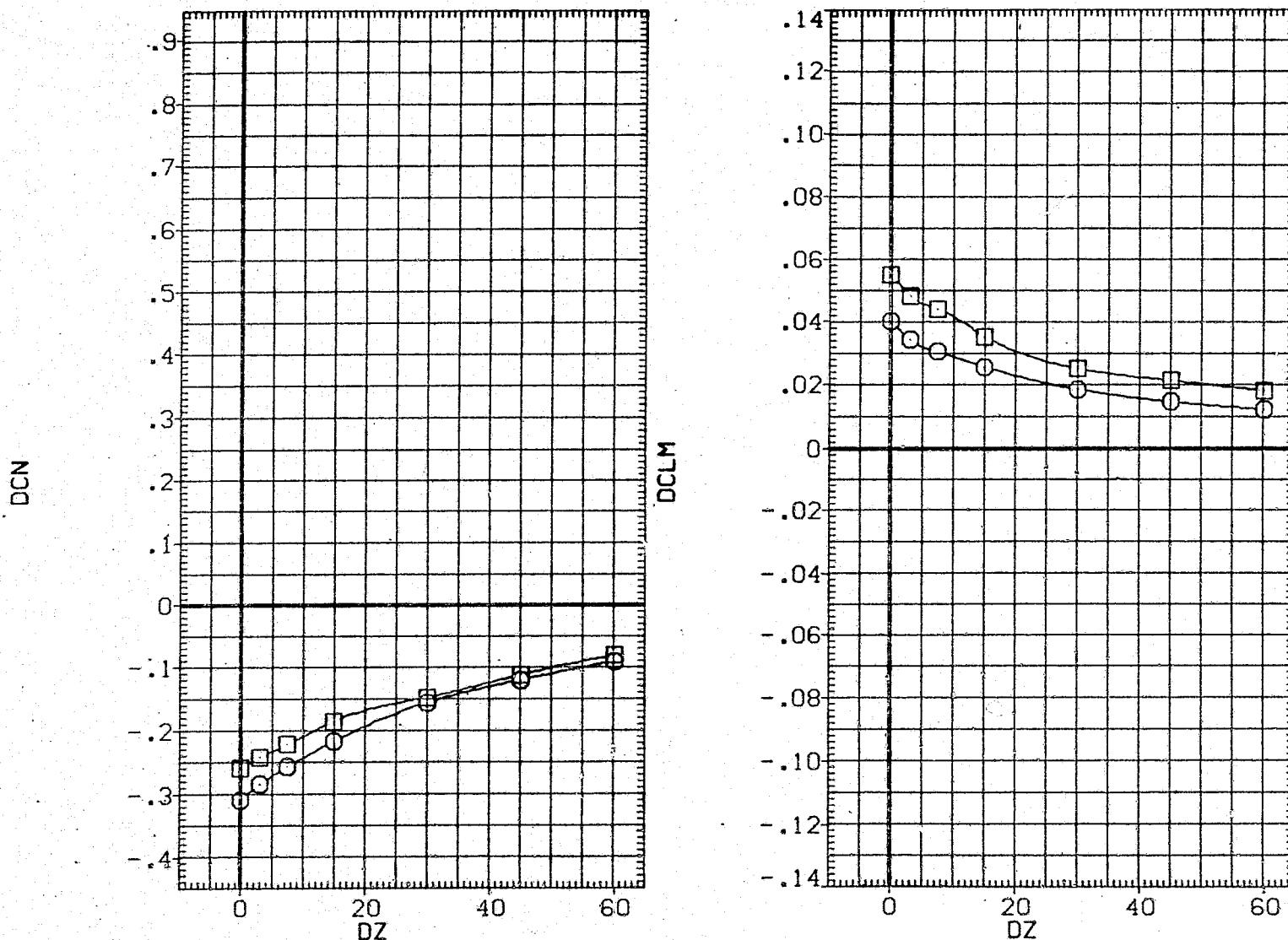


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) . D/S (086 - 010)(VGN086)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	10.000	ALPHAC	8.000	BETAC	.000	SREF	2690.0000 SQ.FT.
□	14.000	ELV-IB	.000	ELV-OB	3.000	LREF	474.8100 IN.
		ELEVON	5.000	MACH	.600	BREF	936.6800 IN.
		PHI	7.500	DX	.000	XMRP	1109.0000 IN.X0
		DY	.000	BETAB	.000	YMRP	.0000 IN.Y0
						ZMRP	325.0000 IN.Z0
						SCALE	.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

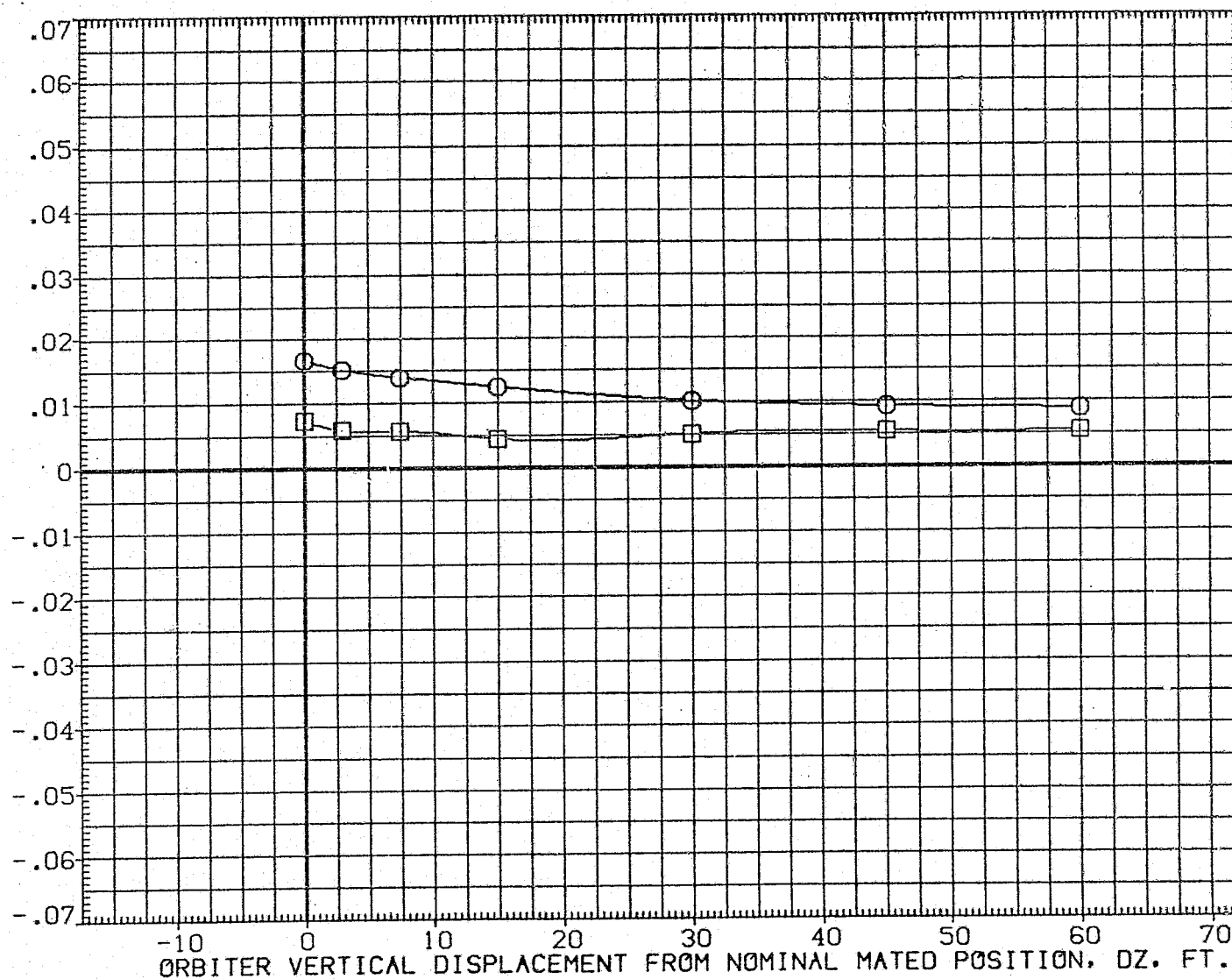


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 8.000	BETAC .000
□	14.000	ELV-IB .000	ELV-OB 3.000
		ELEVON 5.000	MACH .600
		PHI 7.500	DX .000
		DY .000	BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

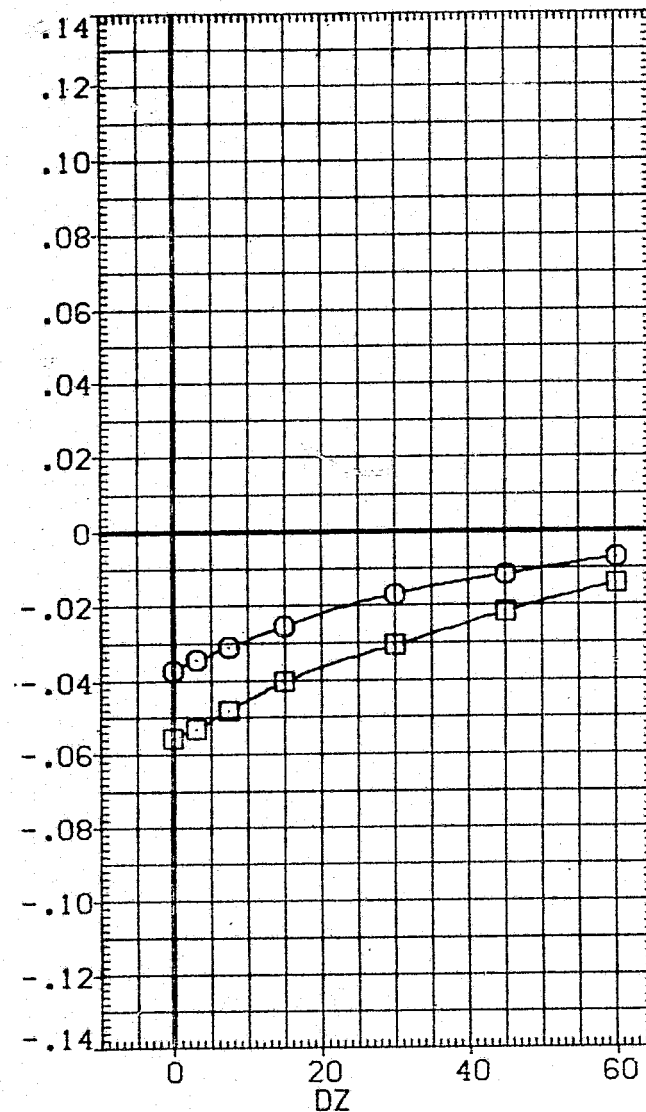
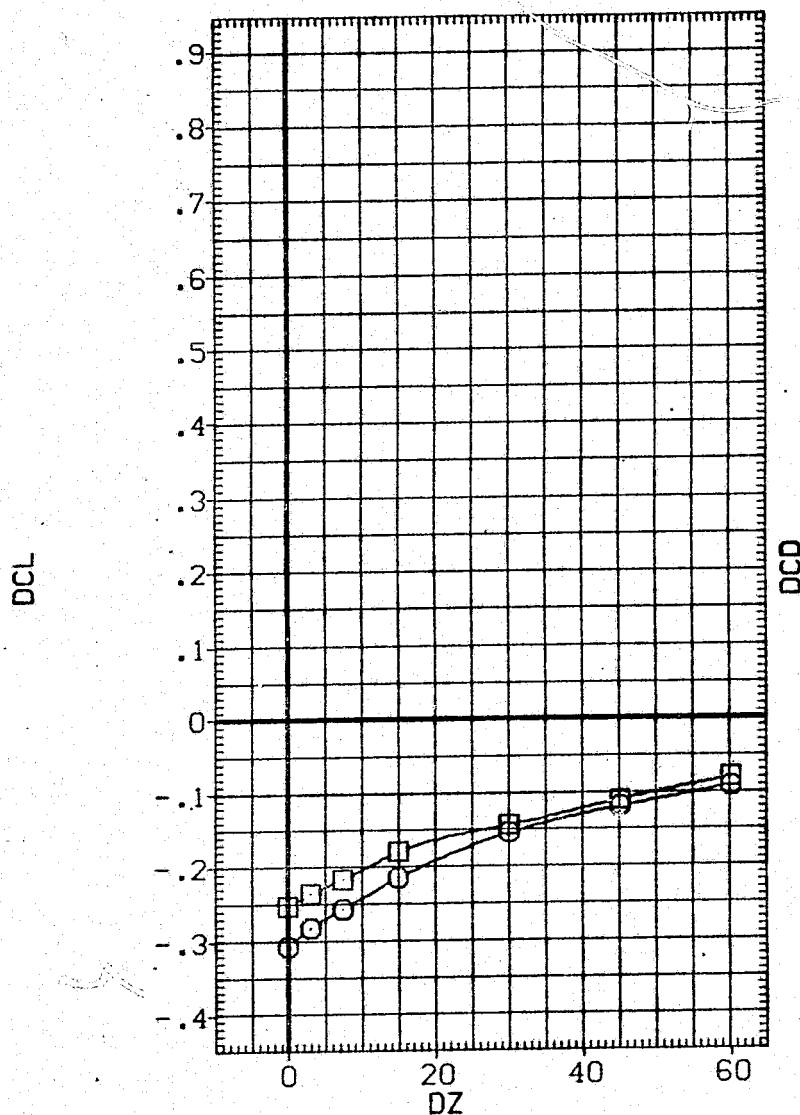


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN085)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-09 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI 7.500 DY .000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2630.0000	SC.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

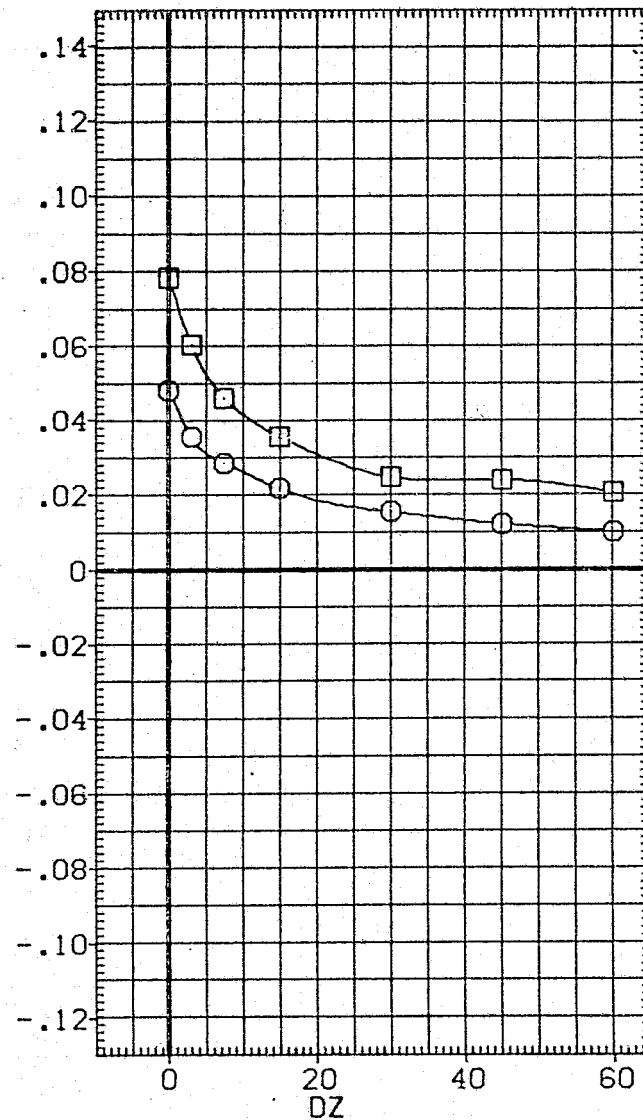
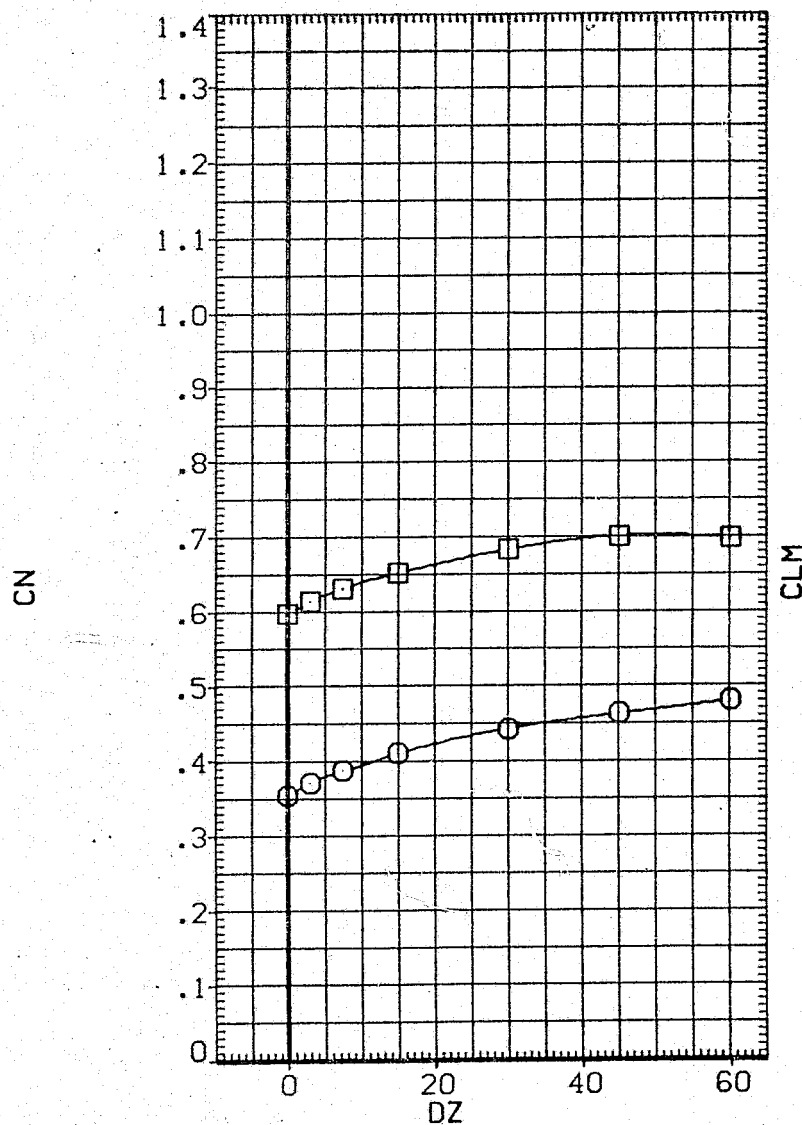


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	7.500	OY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

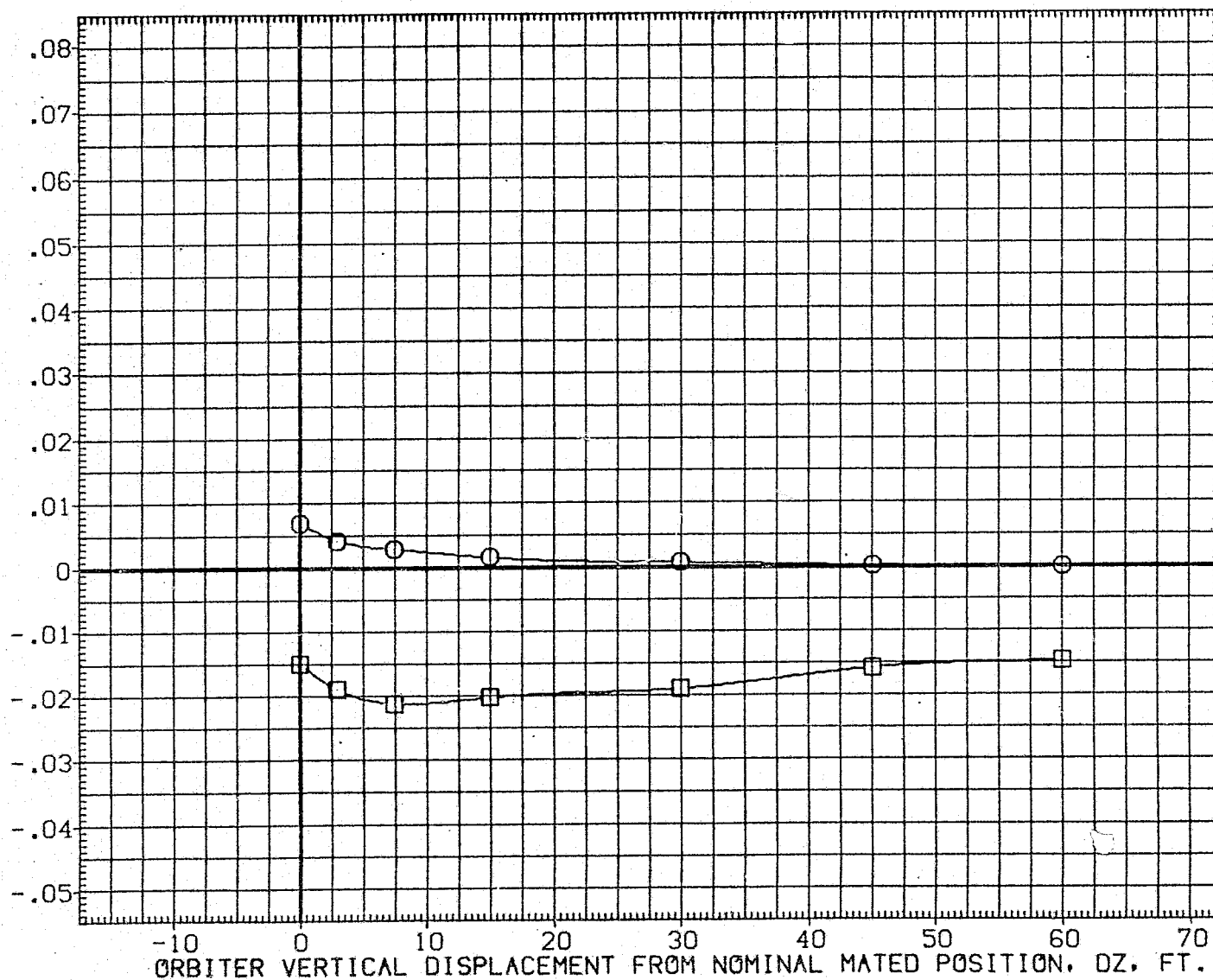


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN085)

SYMBOL	ALPHAO	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETAO	.000	BETAC	.000
		PHI	7.500	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

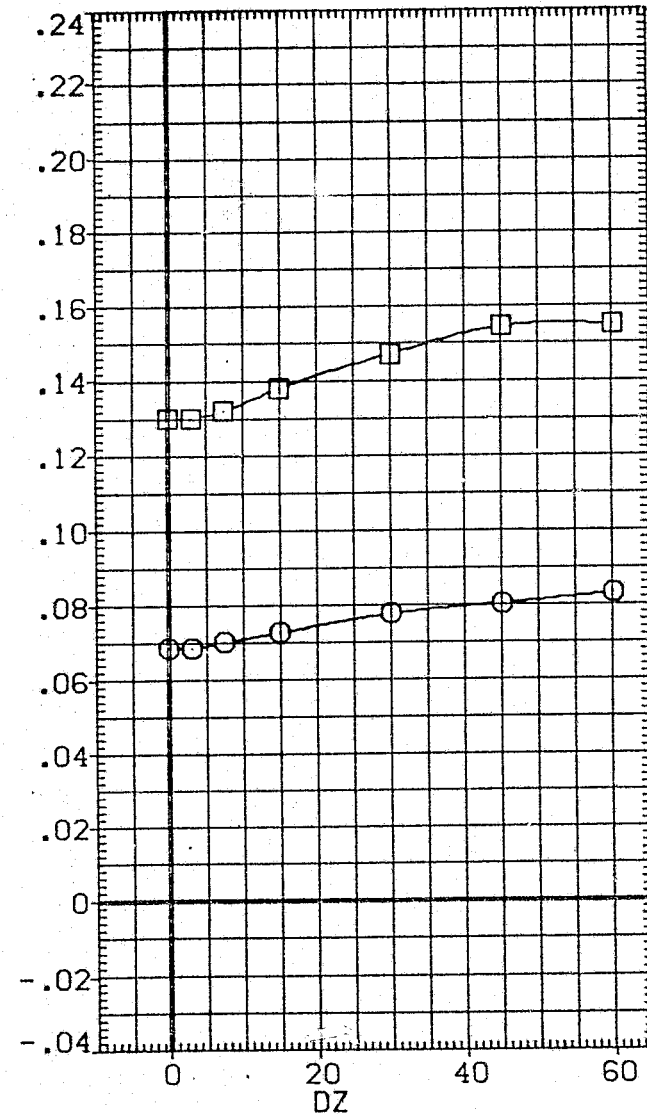
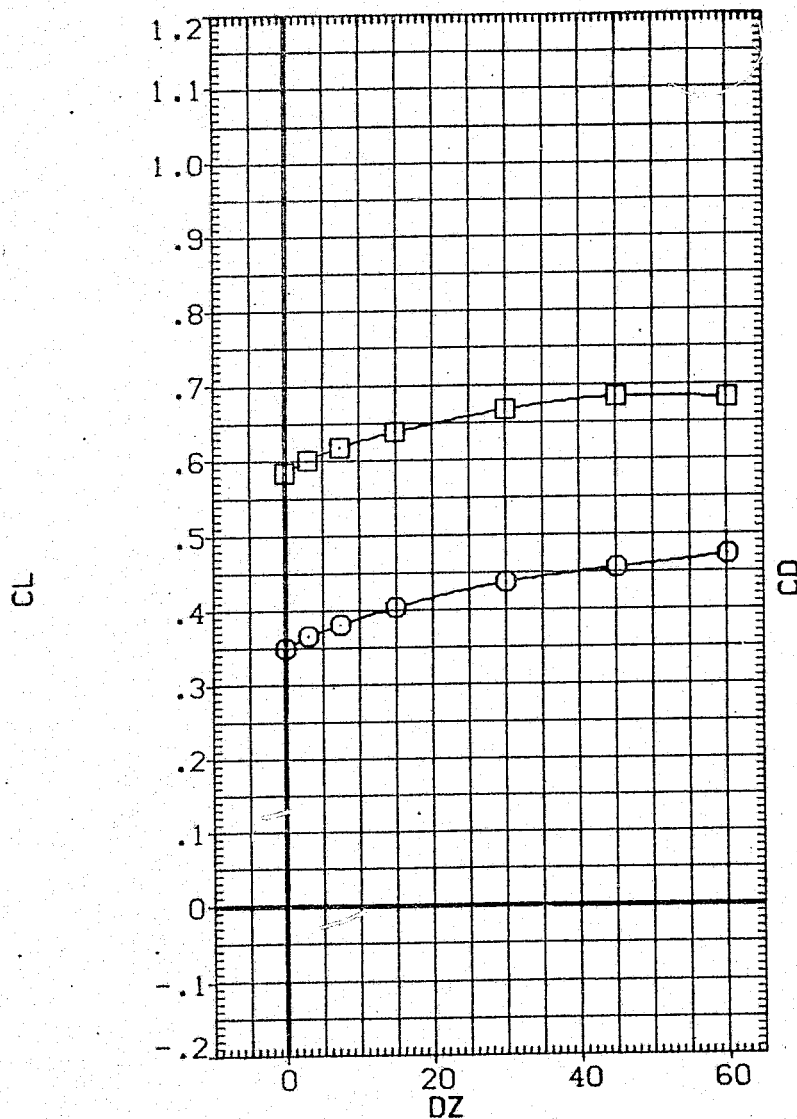


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN085)

SYMBOL



ALPHA0

10.000

ELV-IB

PARAMETRIC VALUES

.000

ELV-OB

3.000

ELEVON

5.000

MACH

.600

BETA0

.000

BETAC

.000

PHI

7.500

DY

.000

DX

10.000

ALPHAC

4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

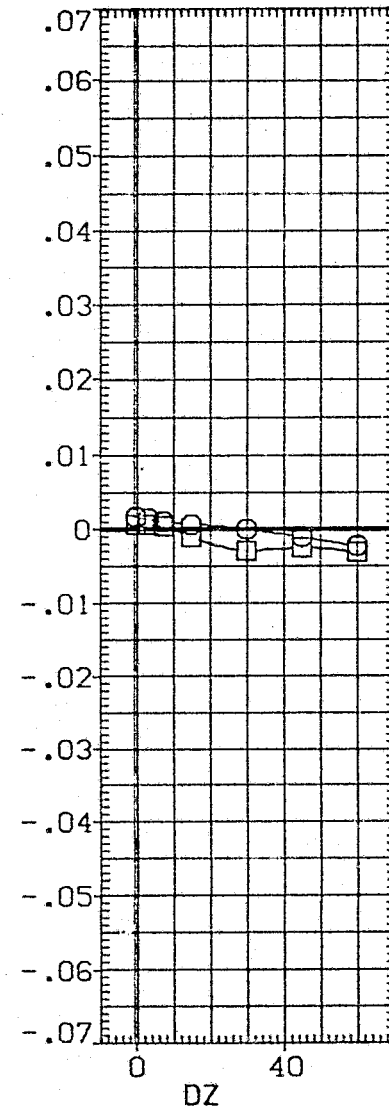
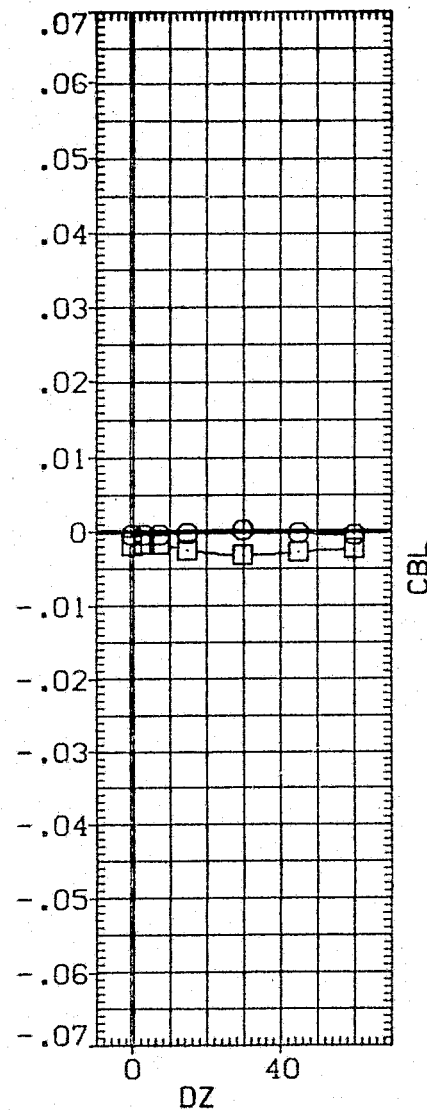
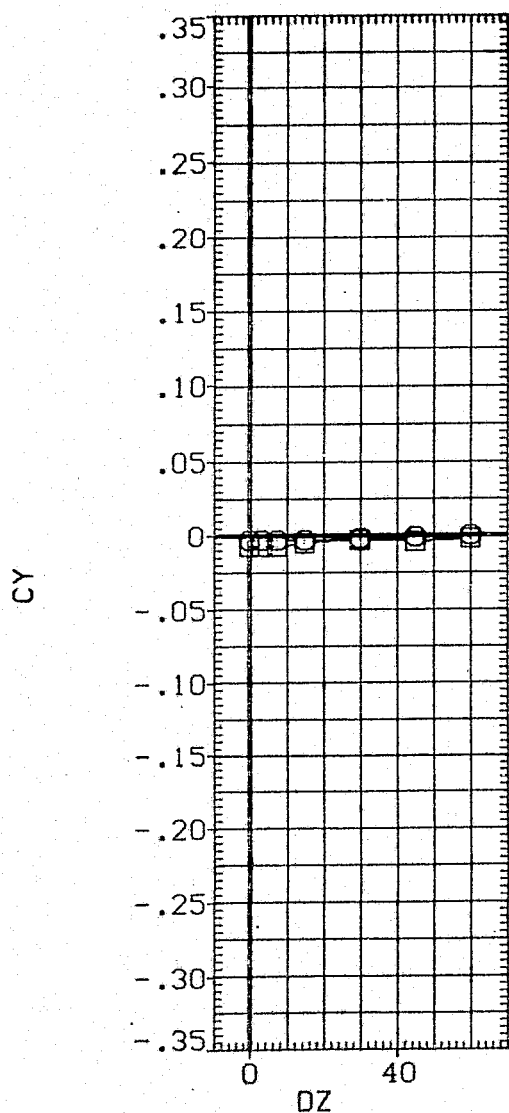


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (085 - 010)(VGN085)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	10.000
		DY	.000	BETAC	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

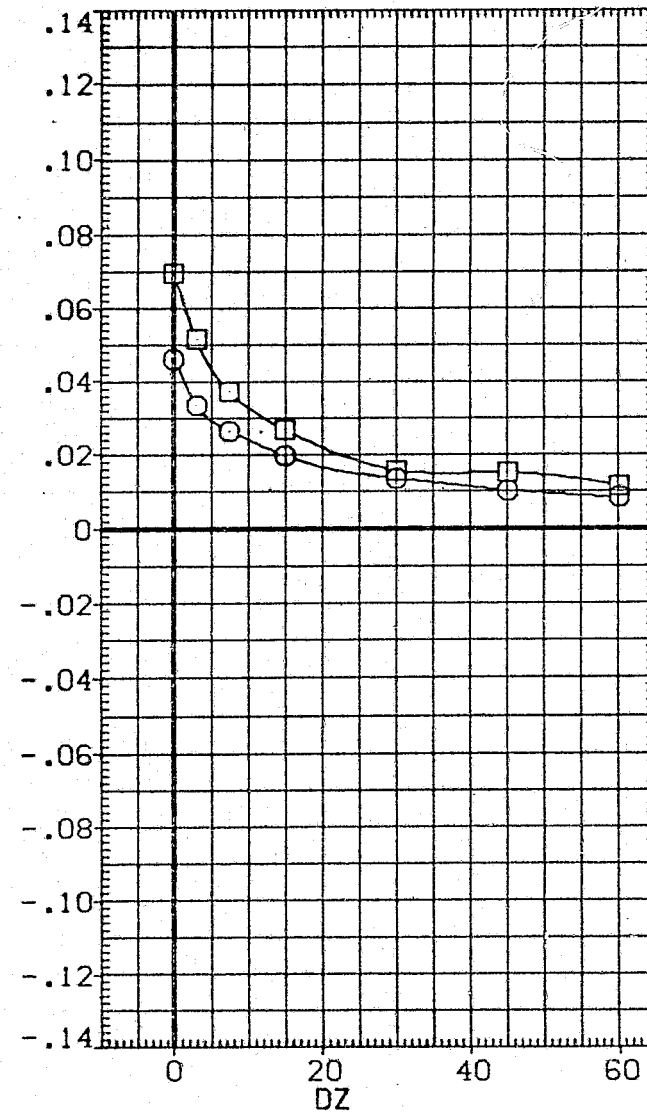
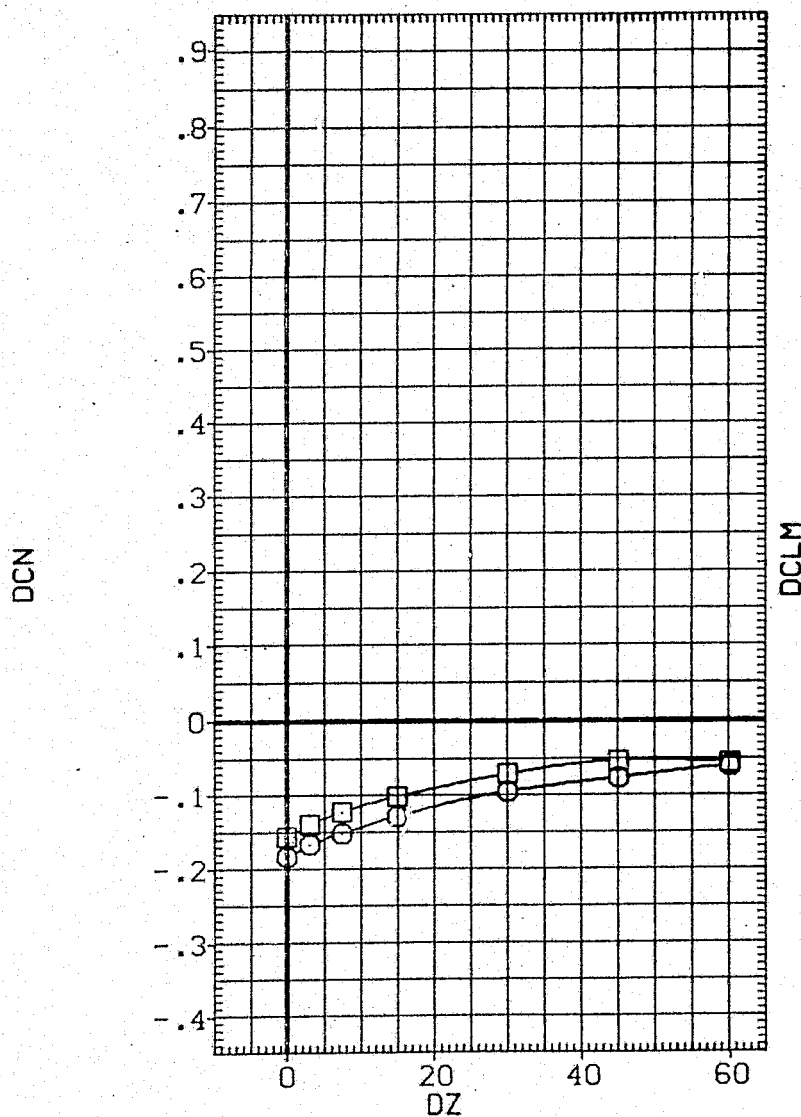


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHA0

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

7.500

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

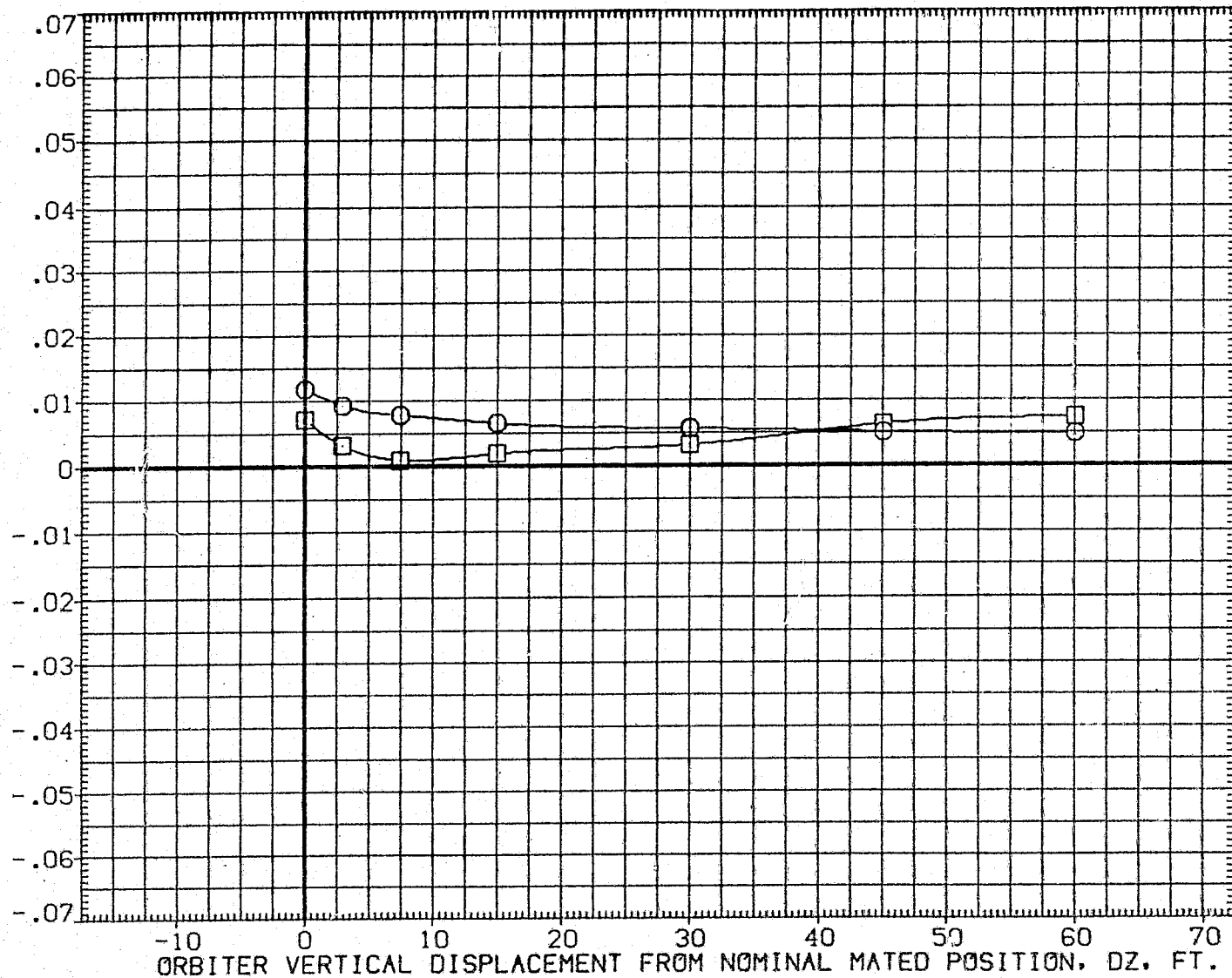


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (085 - 010) (VGN085)

SYMBOL	ALPHA0	ALPHAC	BETAC
○	10.000	4.000	.000
□	14.000	.000	3.000
		ELV-1B	ELV-0B
		5.000	.600
		ELEVON	MACH
		7.500	10.000
		PHI	DX
		.000	BETA0
			.000
		DY	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

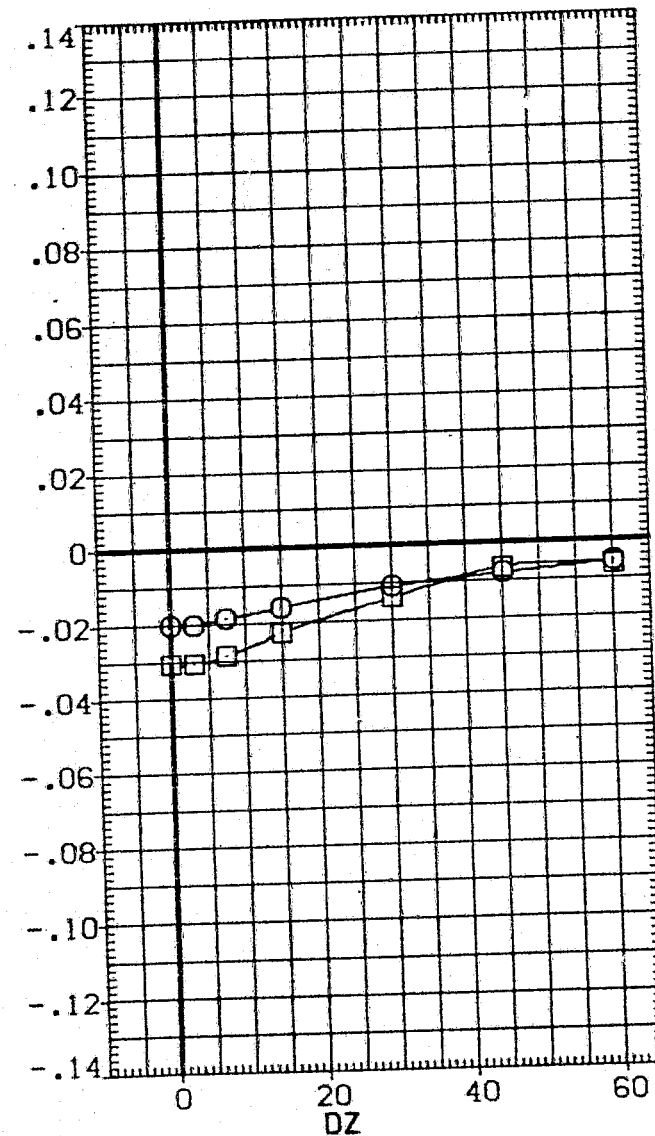
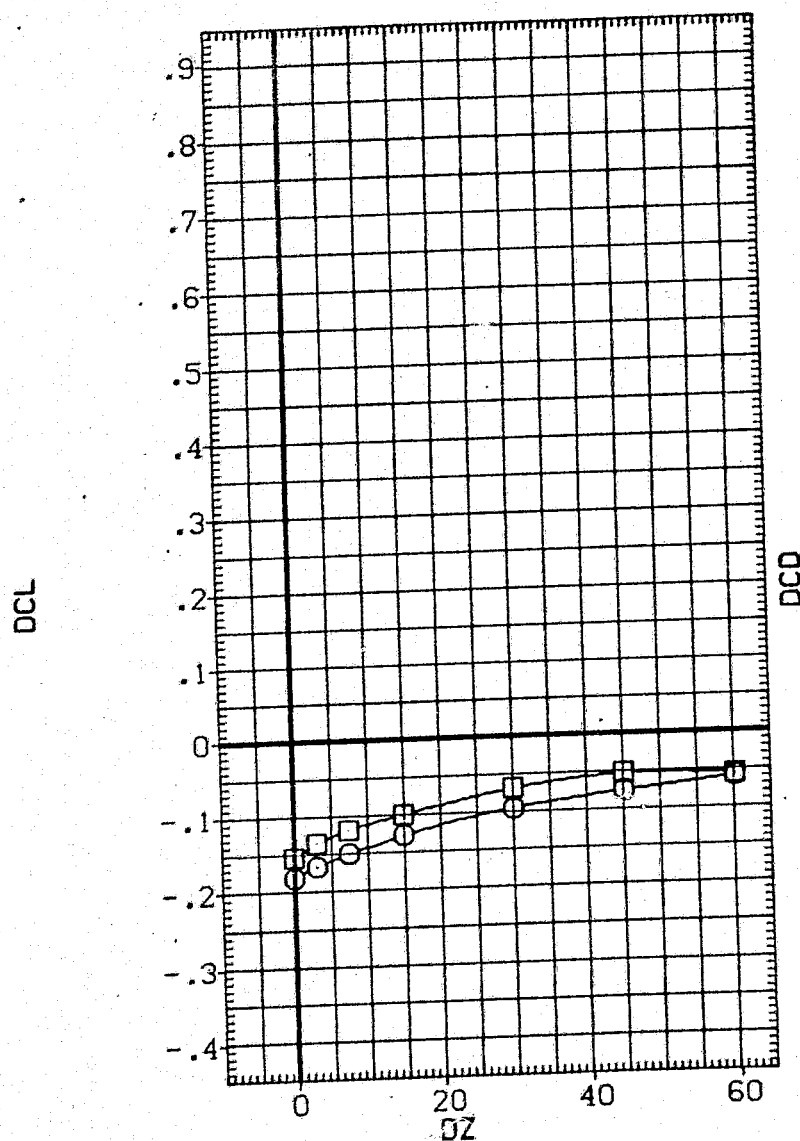


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHAO	ELV-10	PARAMETRIC VALUES	ELV-00	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETAO	.000	BETAC	.000
		PHI	7.500	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

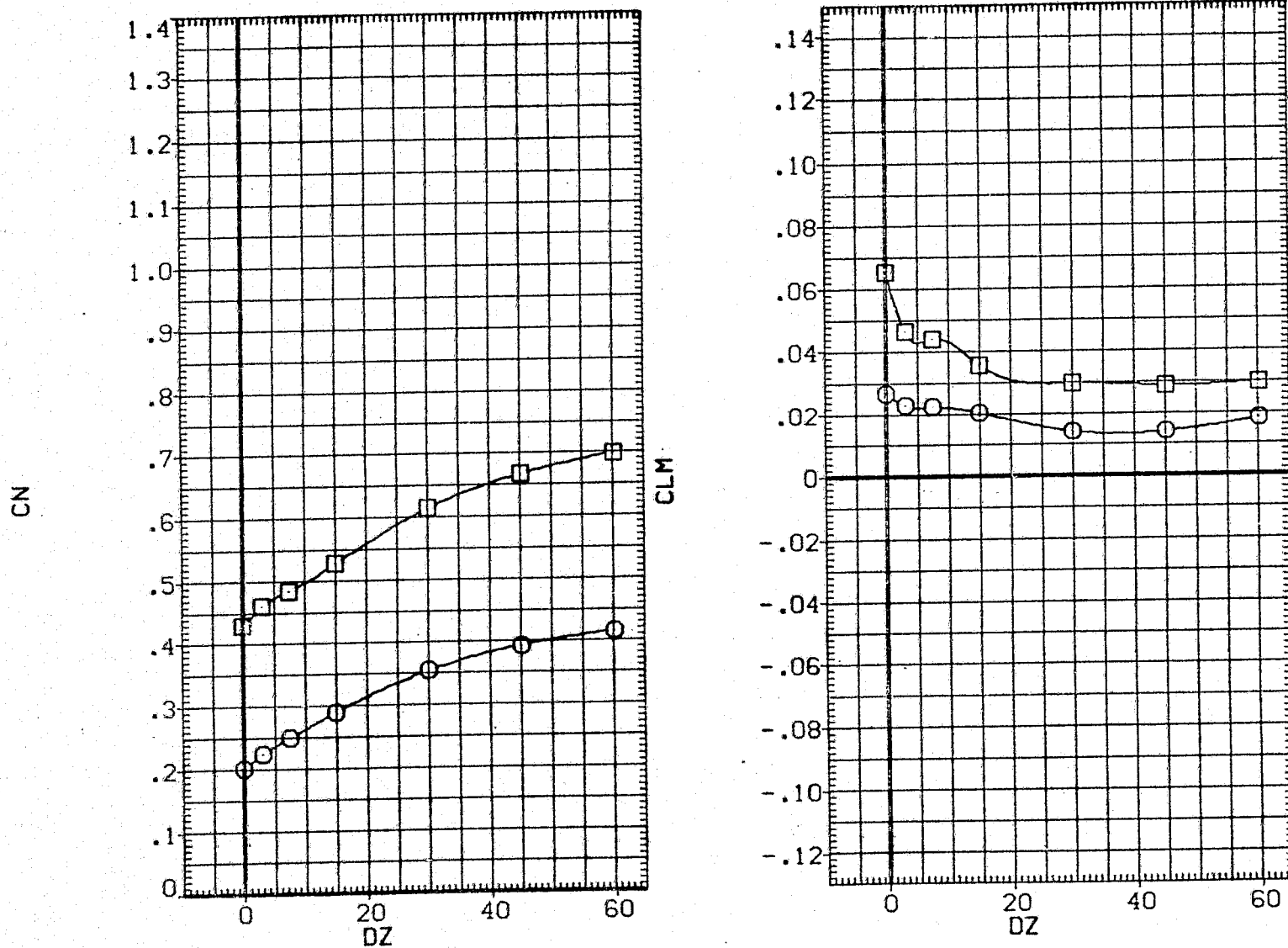


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN087)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-IB

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

7.500

10.000

ELV-OB

MACH

BETAC

DY

ALPHAC

3.000

.600

.000

.000

8.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

AXIAL FORCE COEFFICIENT, CA

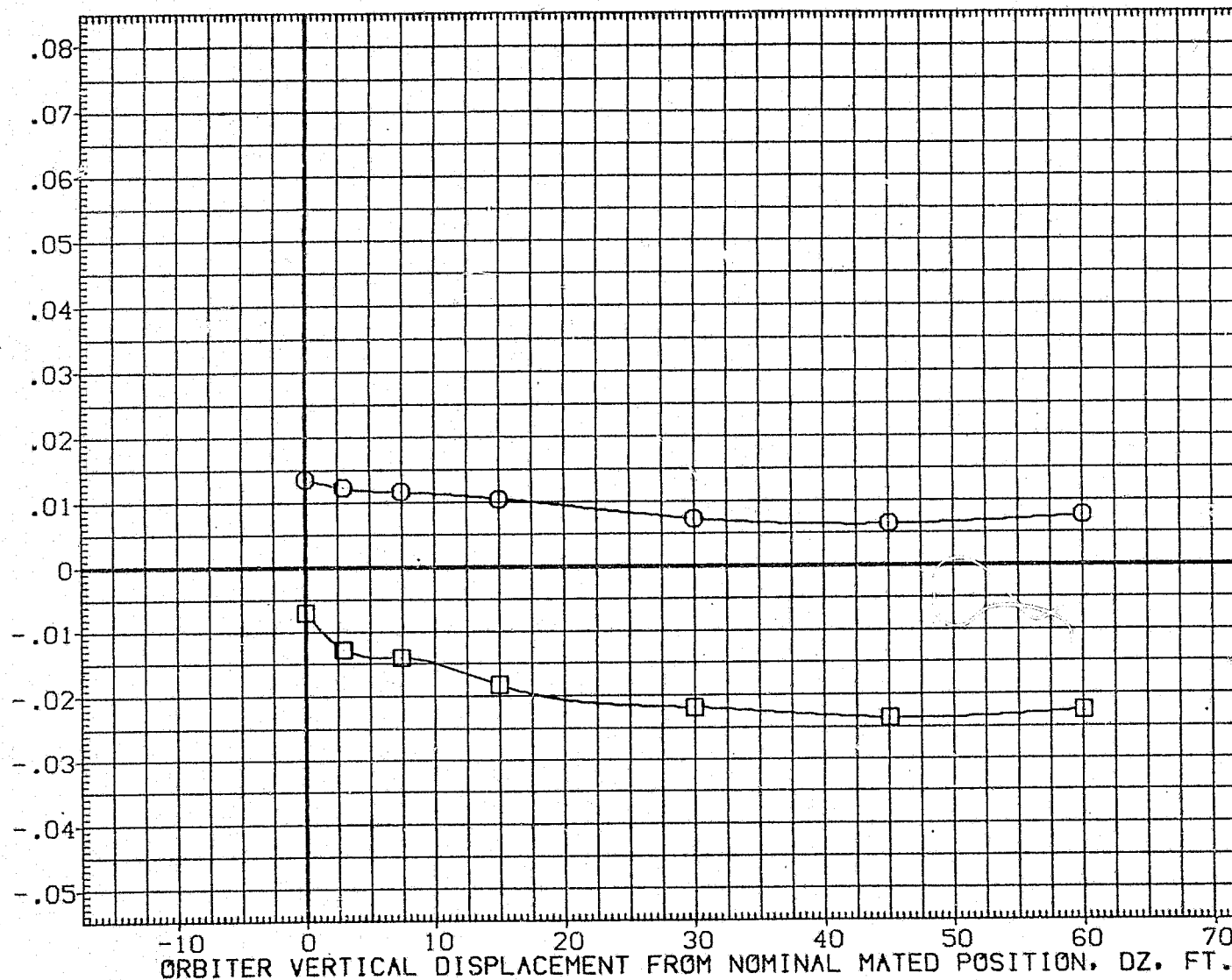


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETAC	.000	BETAC	.000
		PHI	7.500	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

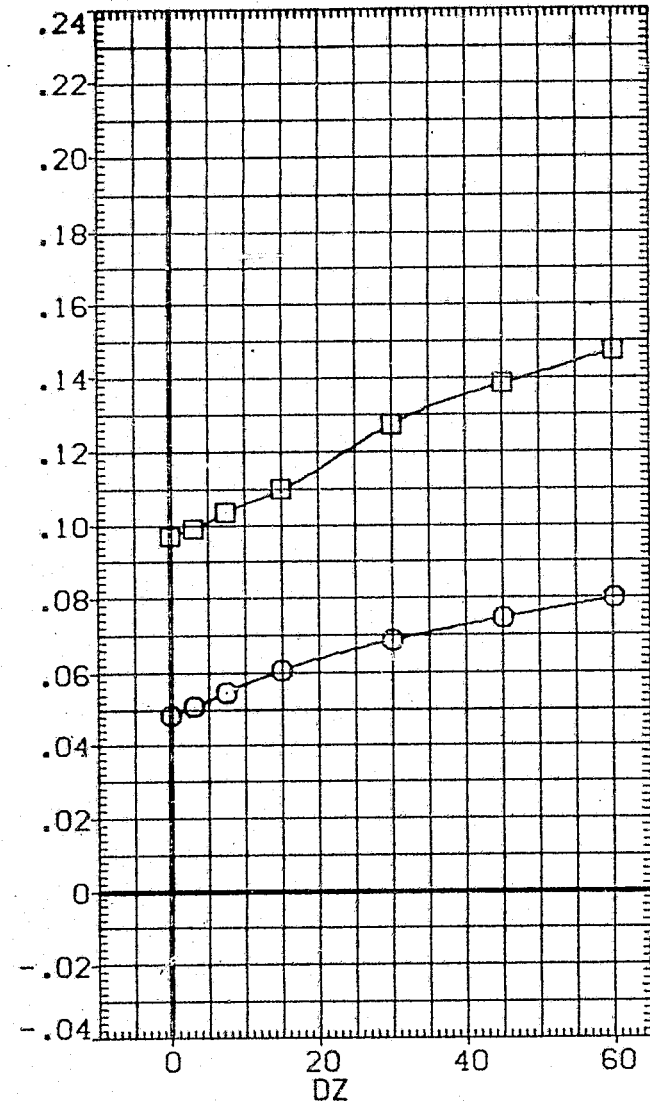
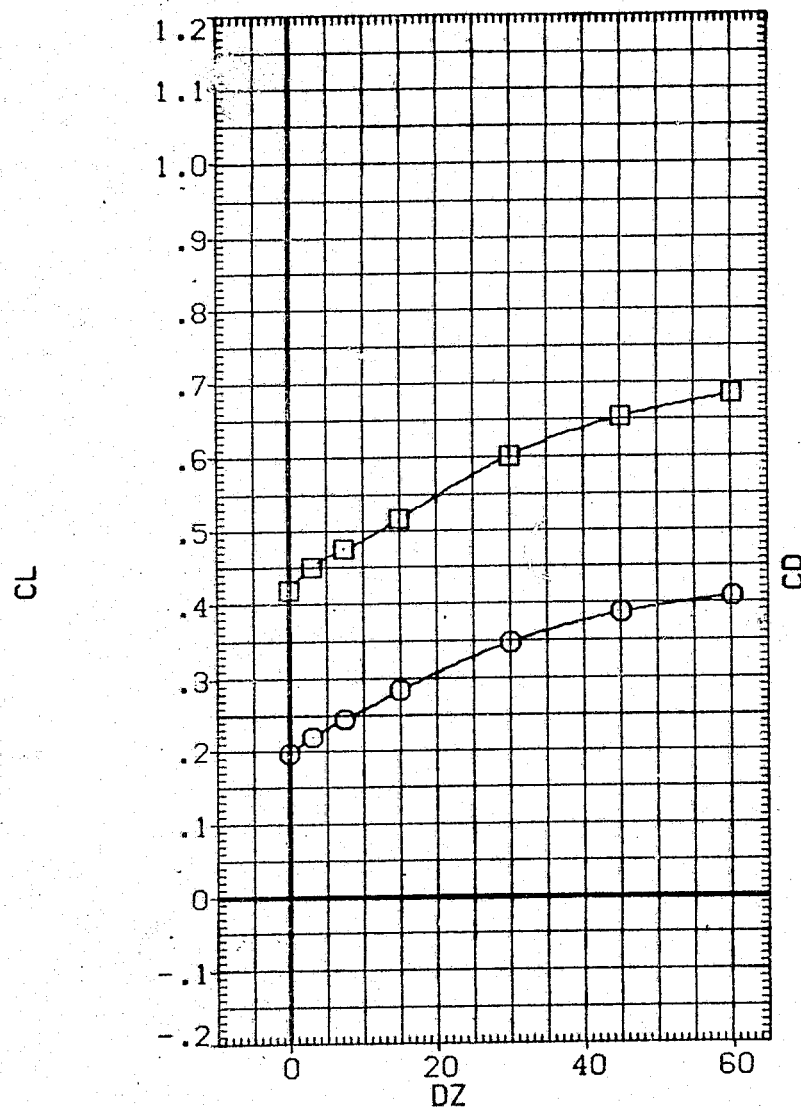


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN087)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB
○	10.000		.000	3.000
□	14.000	ELEVON	5.000	.600
		BETA0	.000	.000
		PHI	7.500	.000
		DX	10.000	8.000
			ALPHAC	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

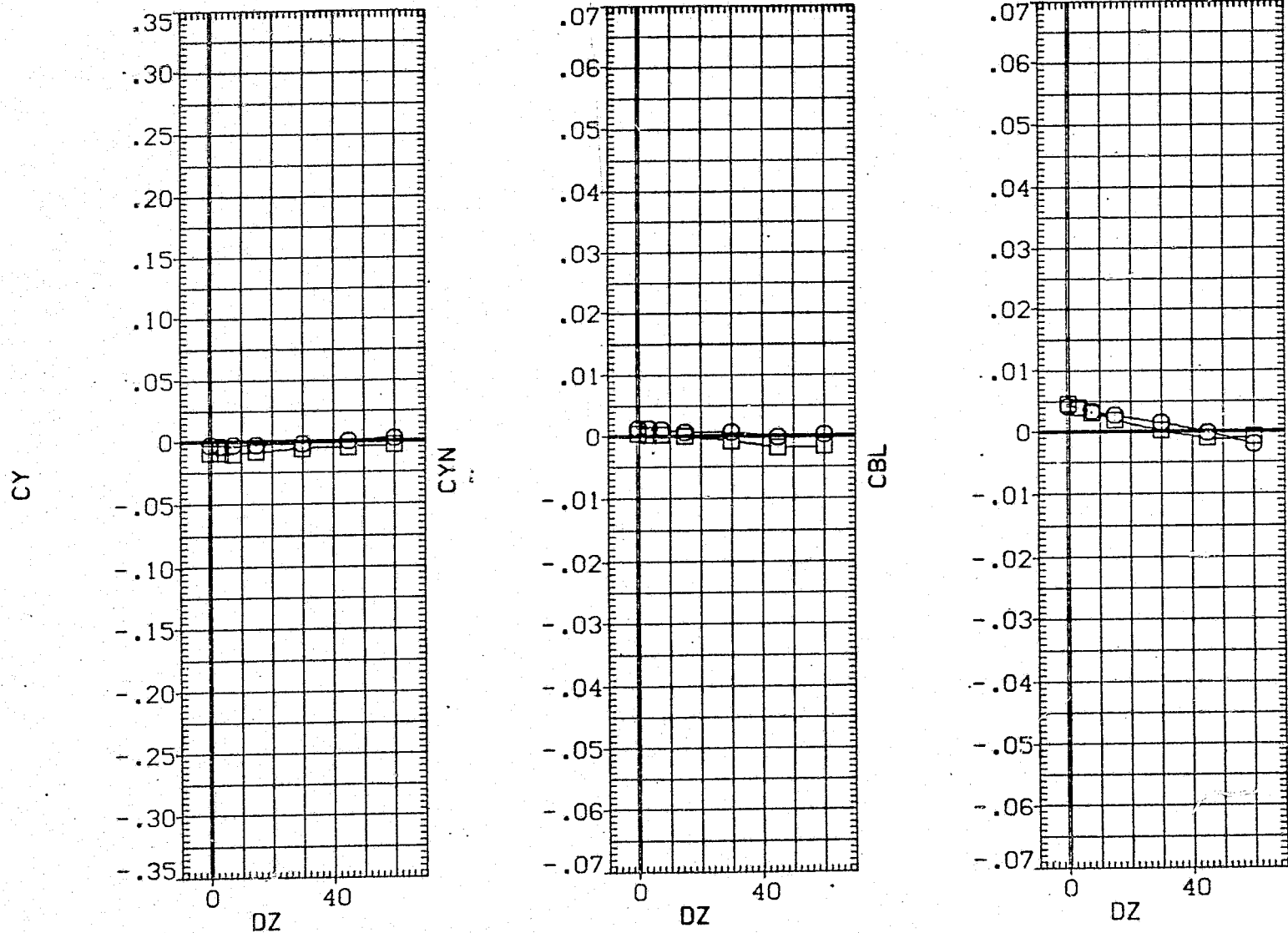


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

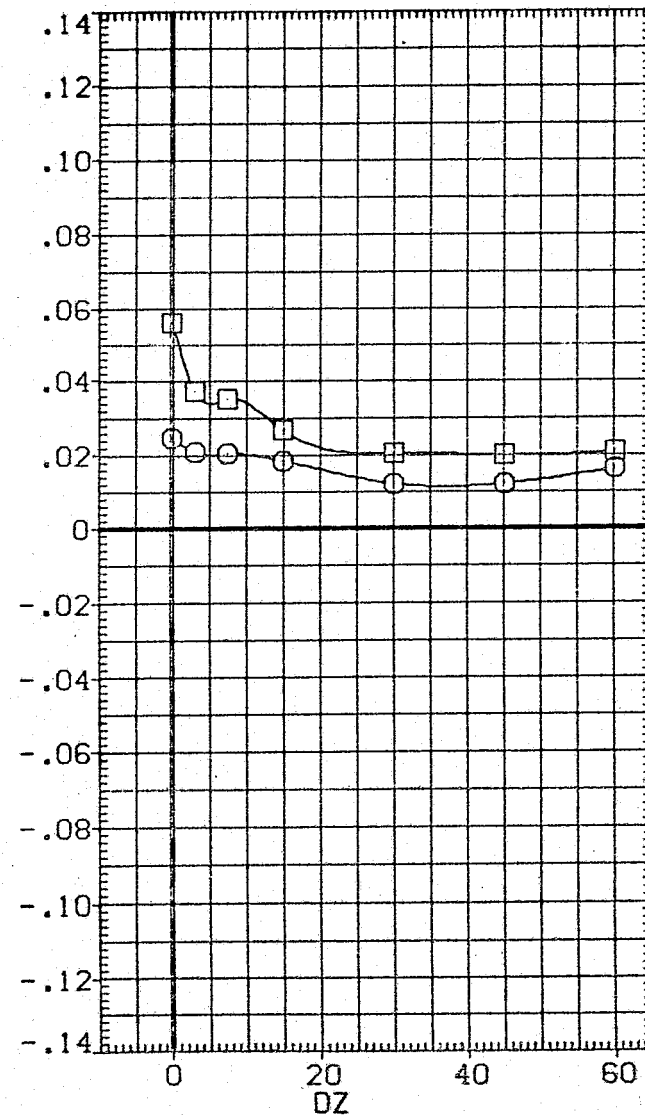
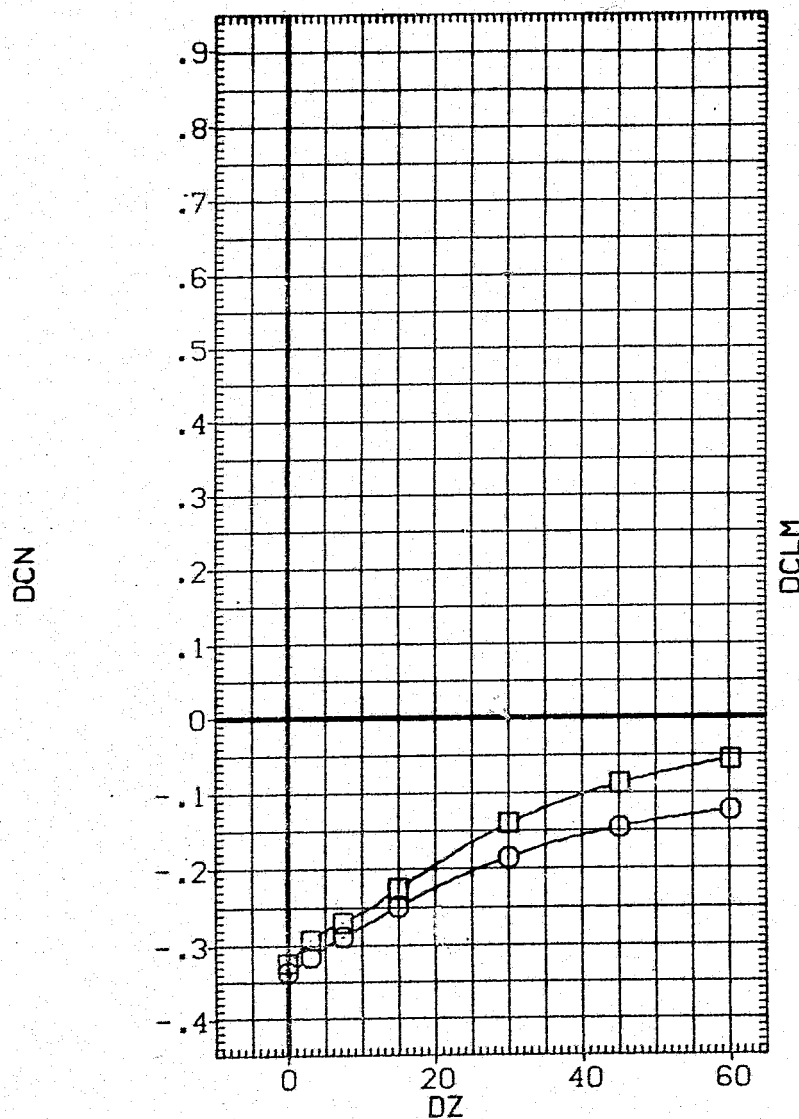


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (087 - 010) (VGN087)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

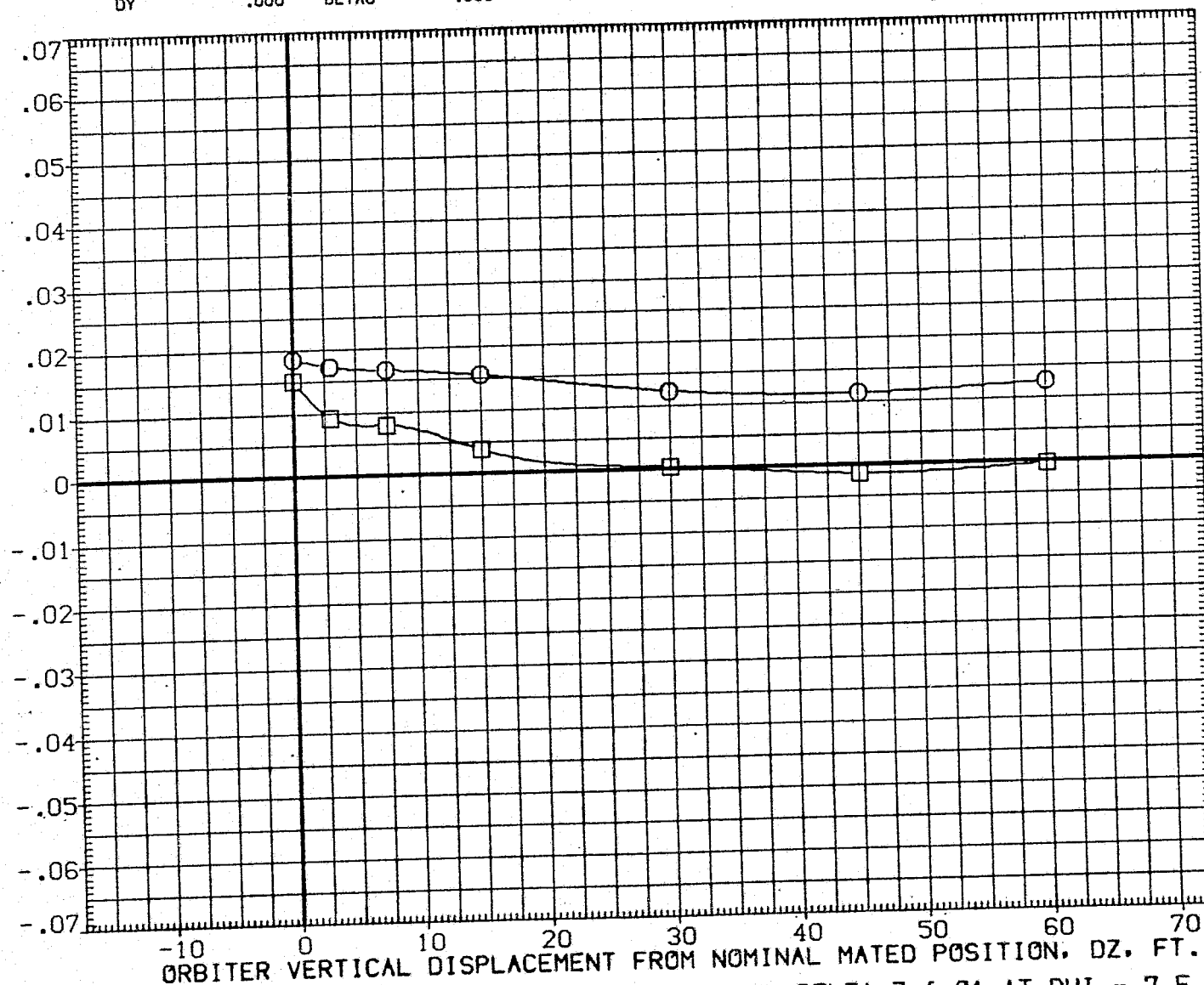


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

7.500

.000

BETAC

ELV-OB

MACH

DX

BET-0

.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF

2690.0000

LREF

474.8100

BREF

936.6800

XMRP

1109.0000

YMRP

.0000

ZMRP

375.0000

SCALE

.0300

SQ.FT.

IN.

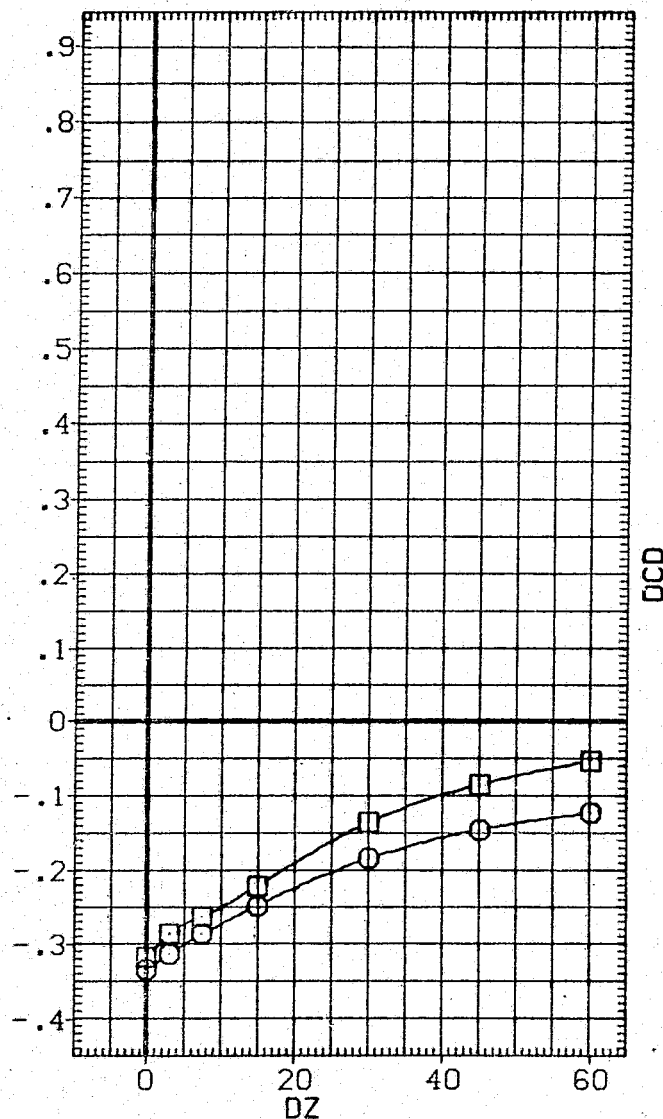
IN.

IN.X0

IN.Y0

IN.Z0

DCL



DCD

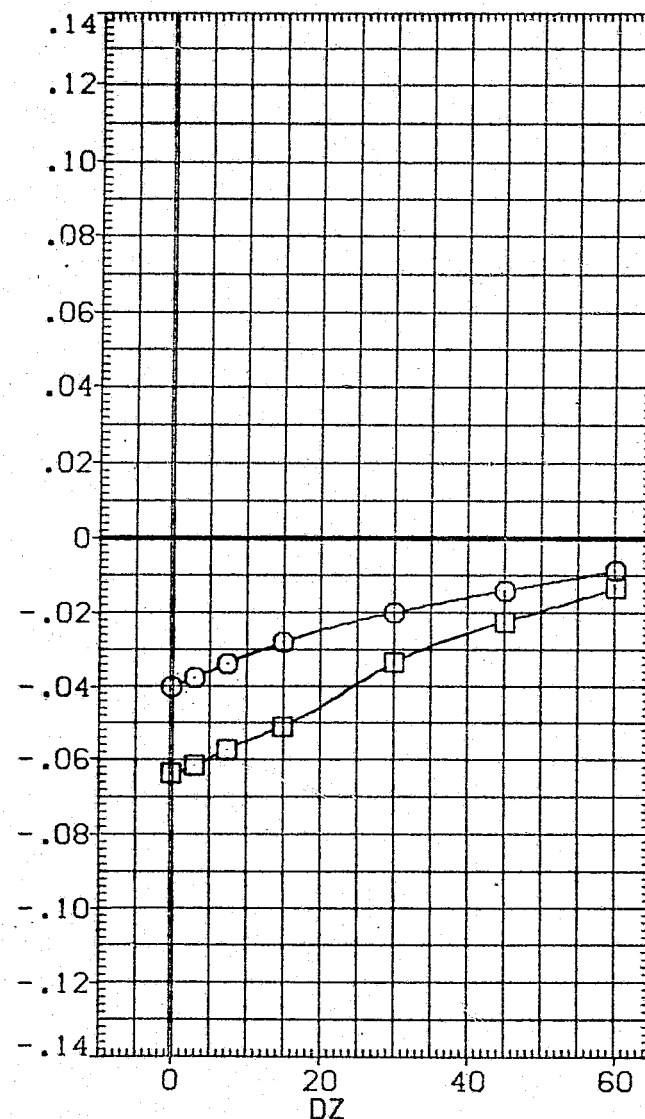


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN088)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	14.000	ELV-1B	.000	ELV-0B	3.000
○			ELEVON	5.000	MACH	.600
□			BETA0	.000	BETAC	.000
			PHI	7.500	DY	10.000
			DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

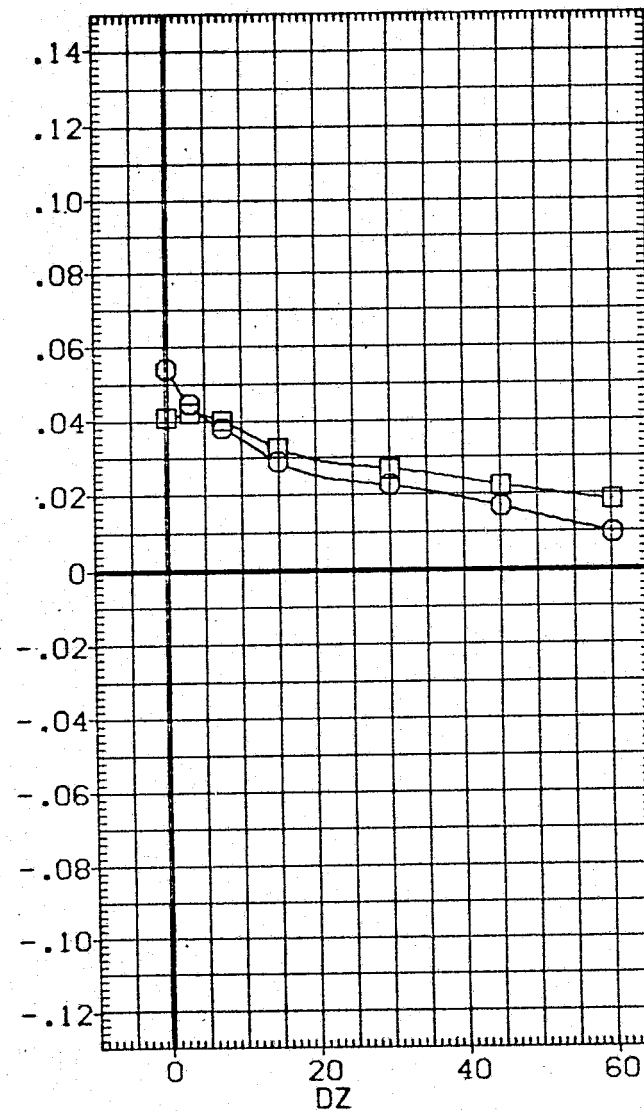
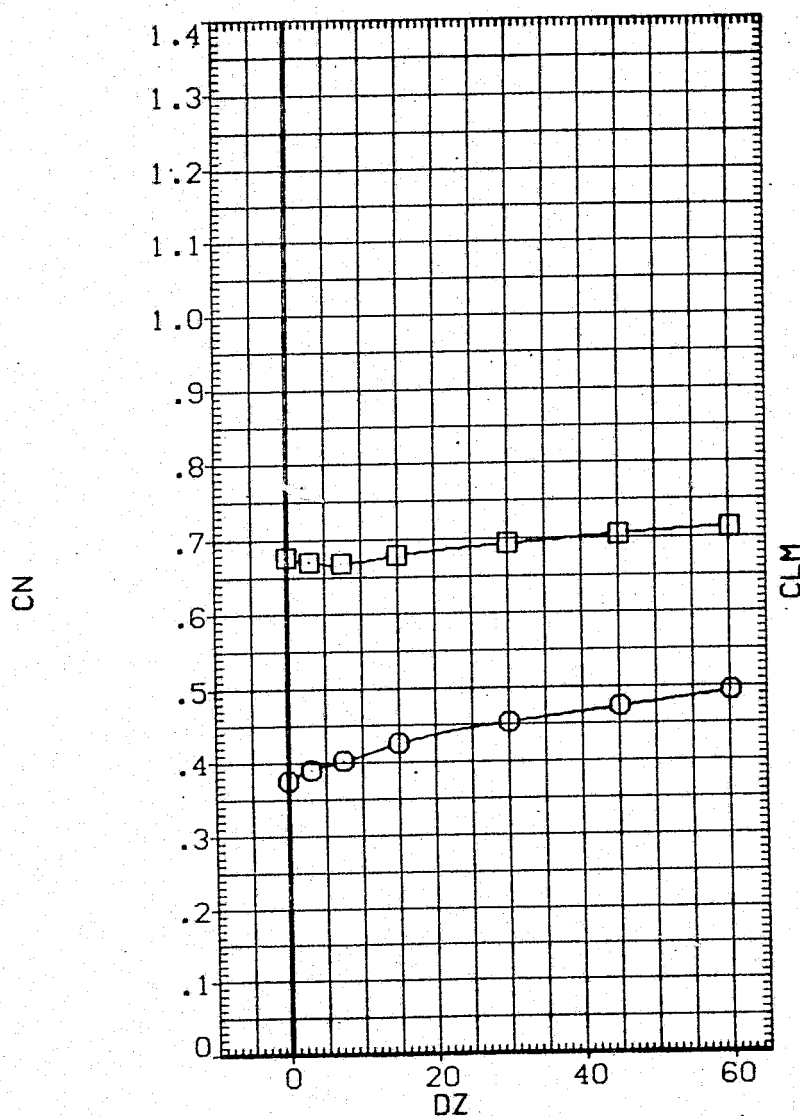


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

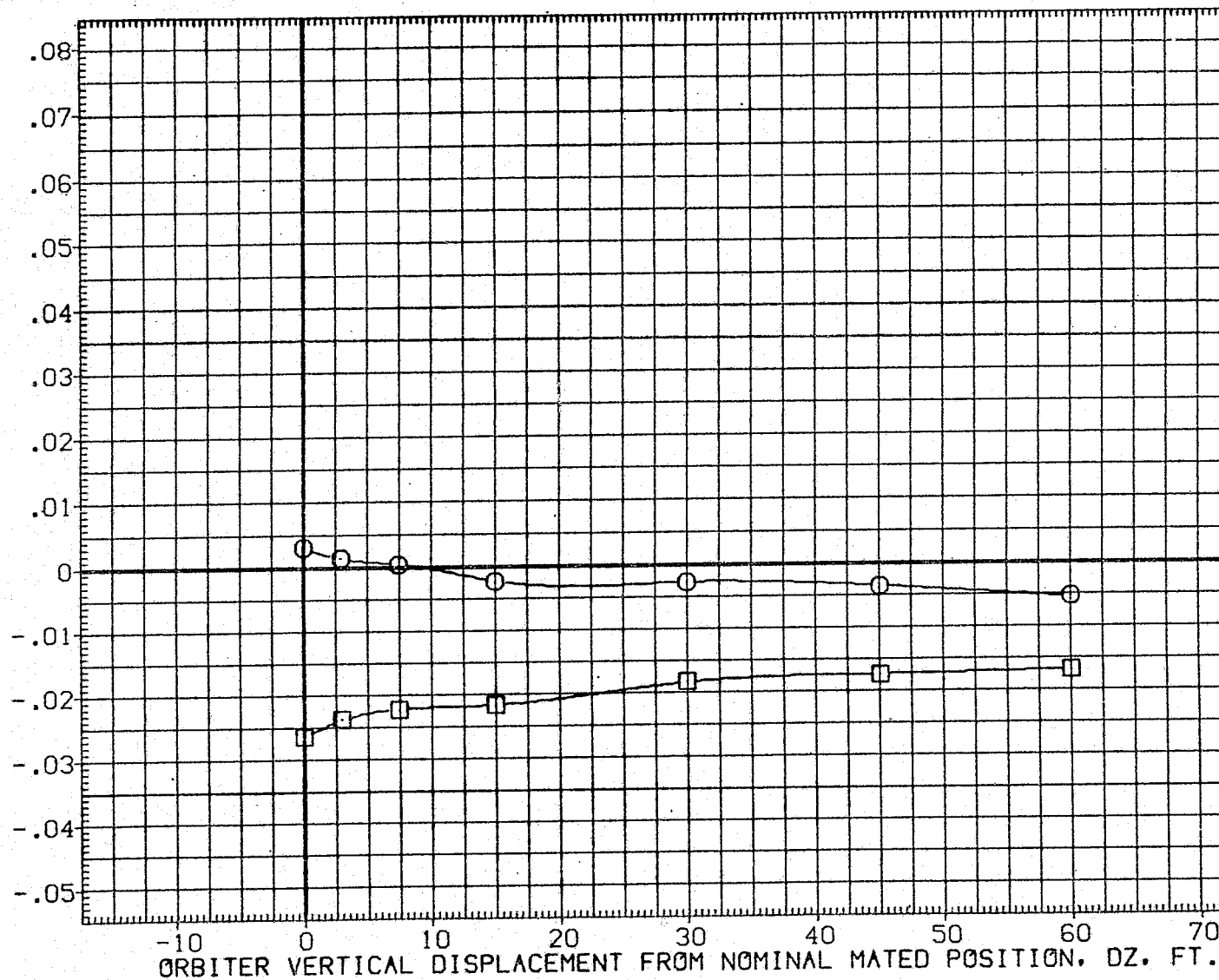


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN088)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

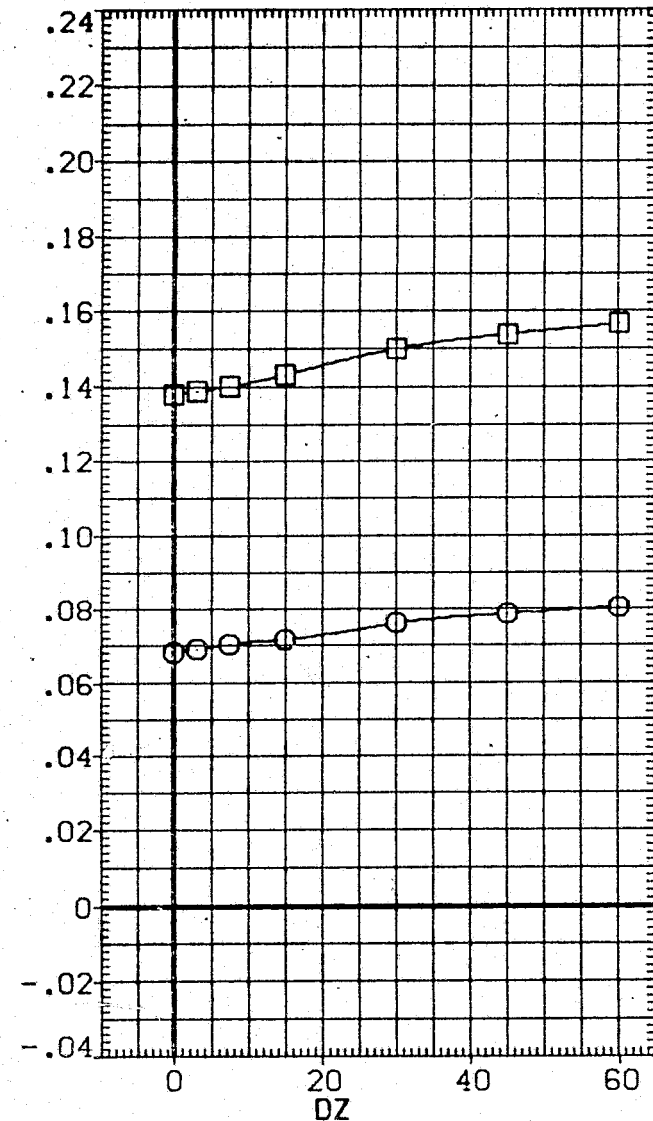
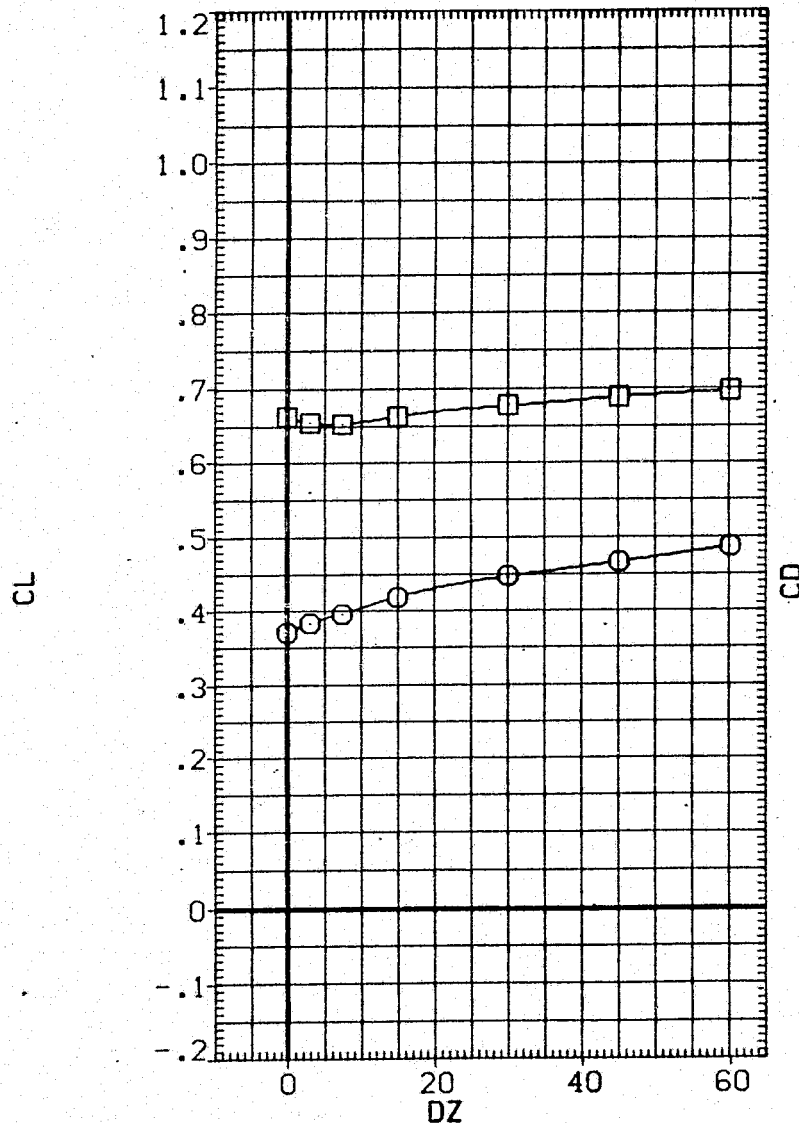


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000		.000	3.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

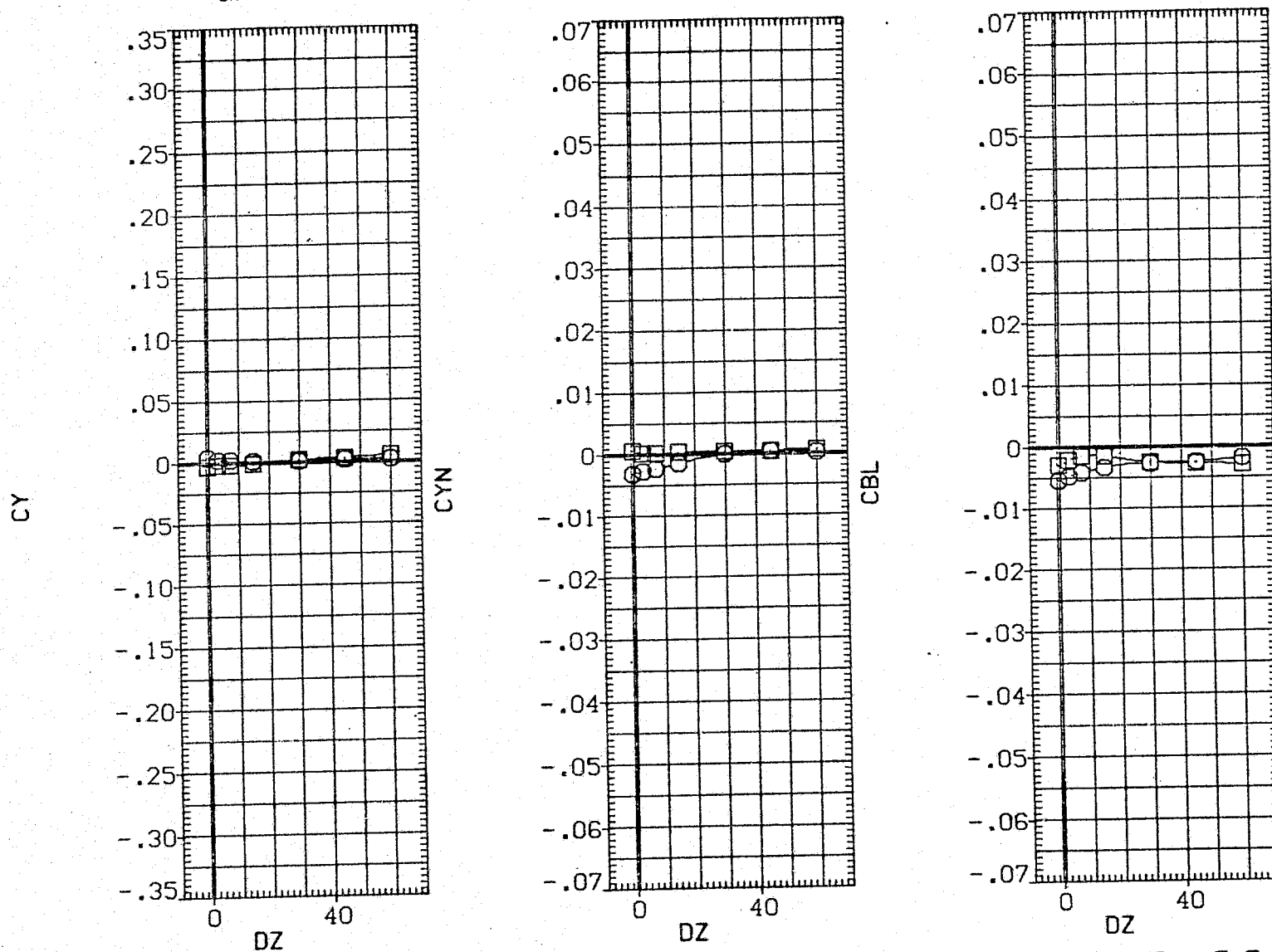


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1'01 S1) - (01 S1)

D/S (088 - 010)(VGN088)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

7.500

10.000

BETAC

ELV-OB

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

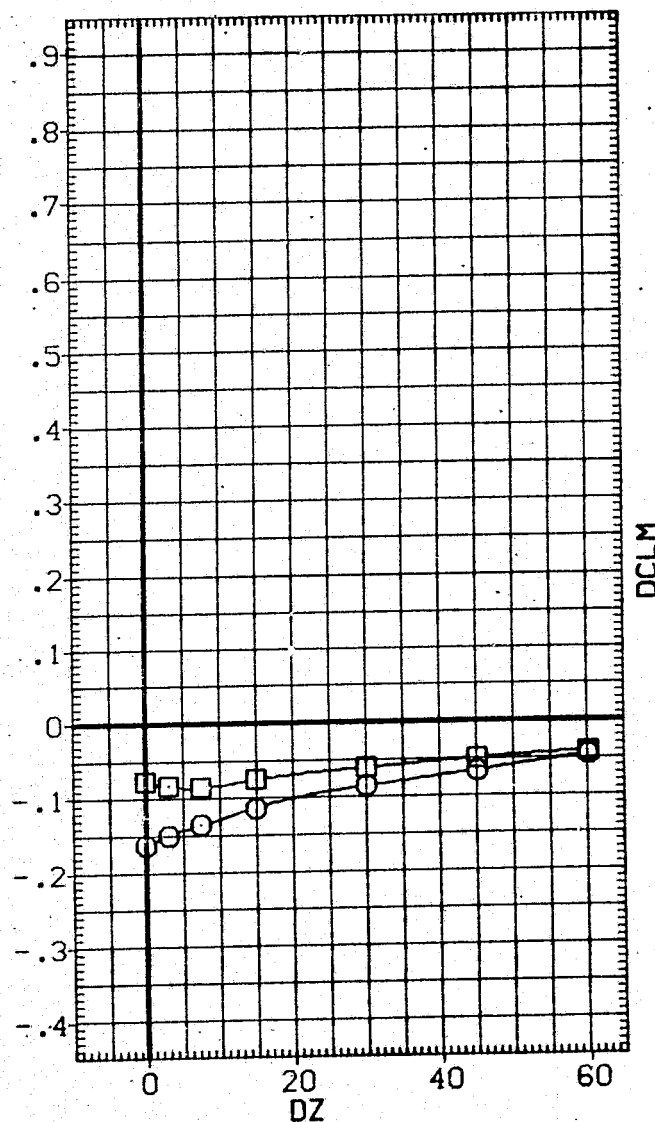
375.0000

IN.Z0

SCALE

.0300

DCN



DCLM

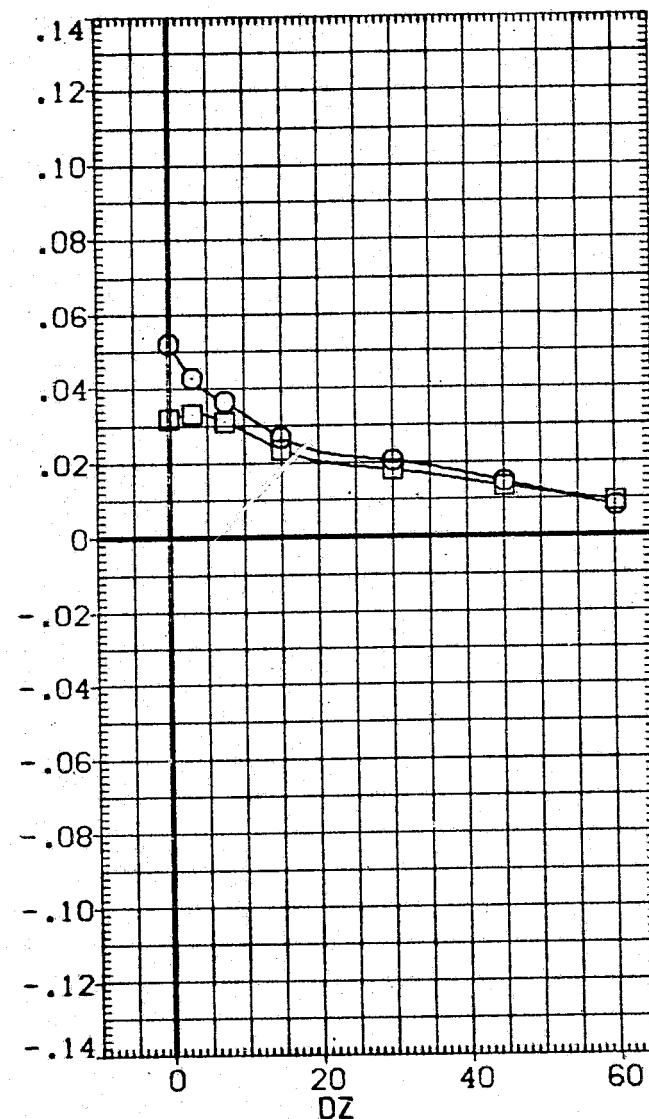


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

BETAC

ELV-OB

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

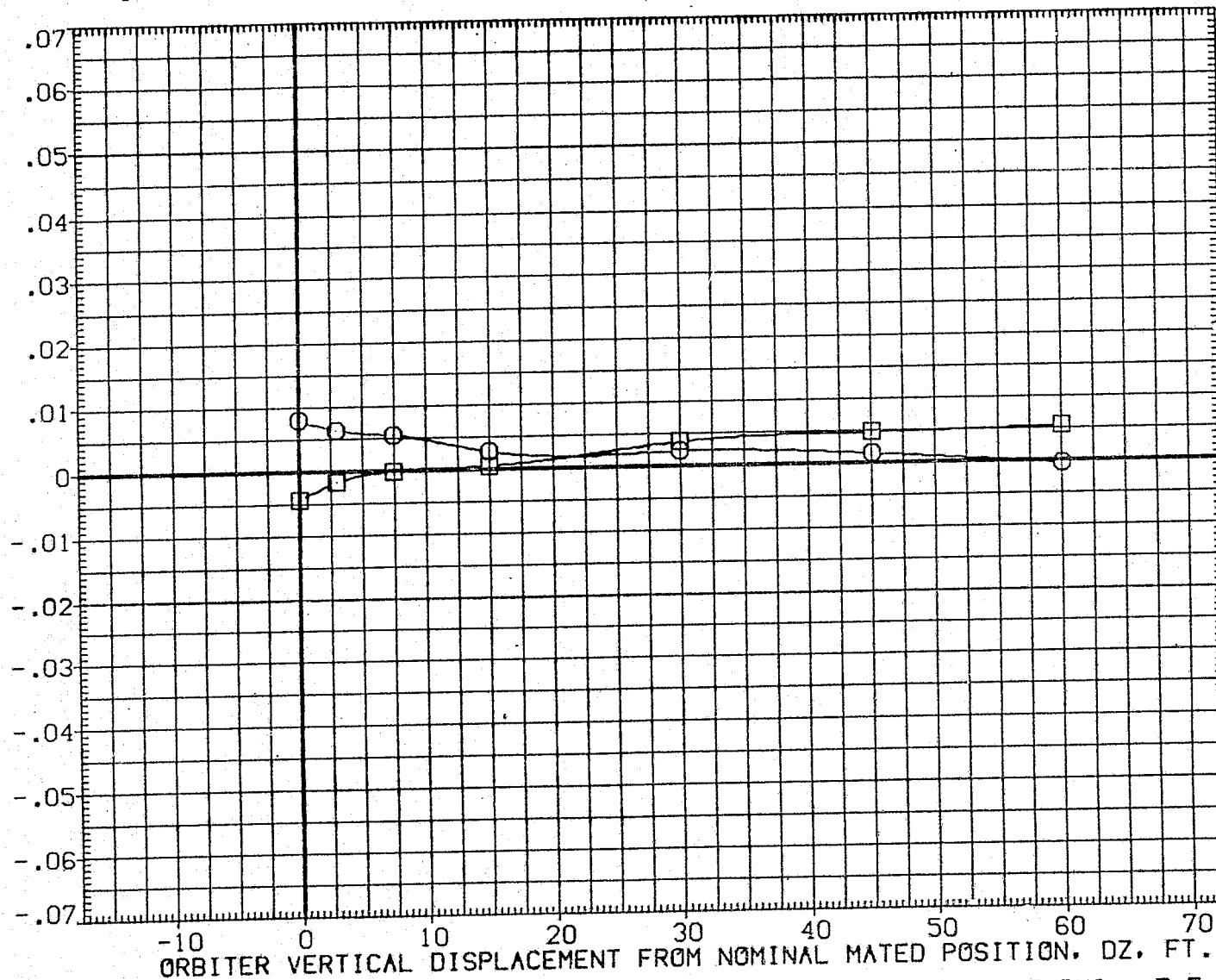


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) . D/S (088 - 010)(VGN088)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

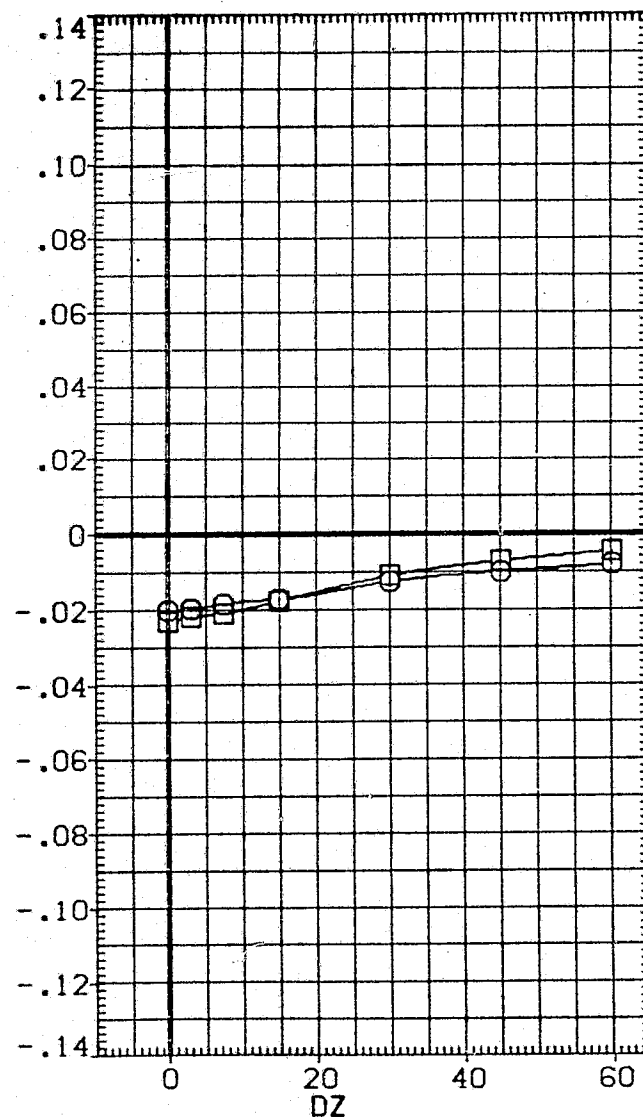
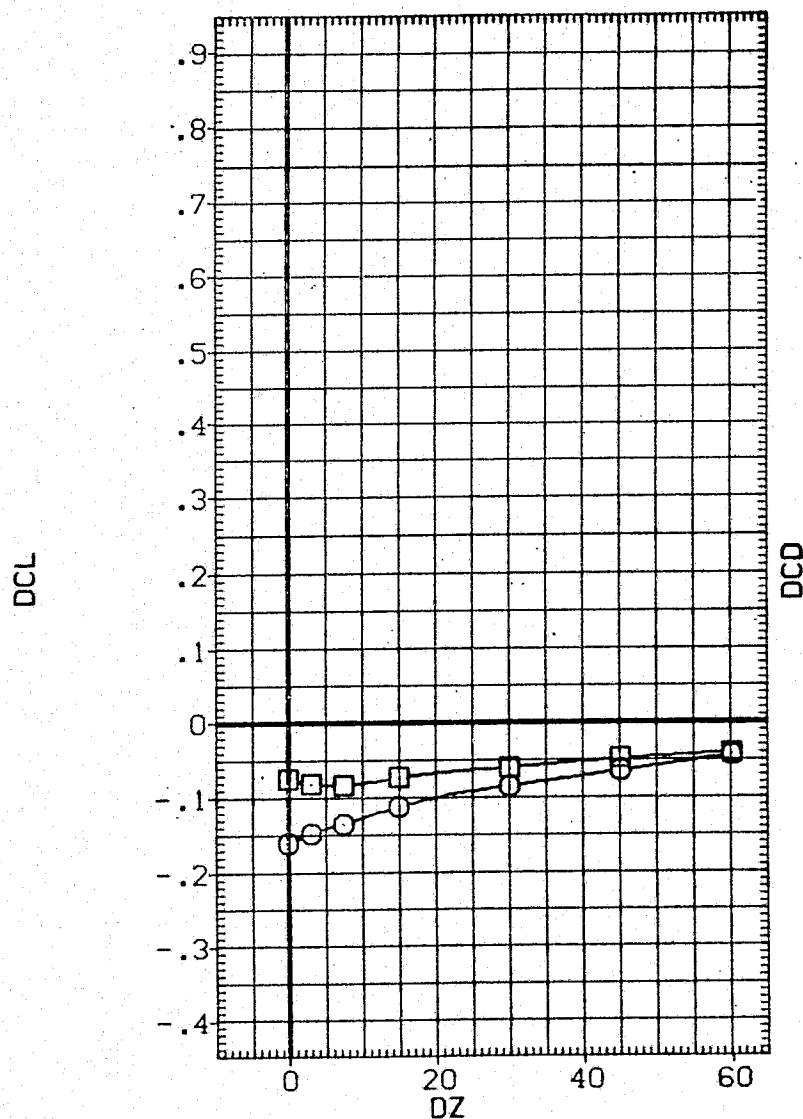


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-10	PARAMETRIC VALUES	ELV-08	
○	10.000	ELEVON	.000	MACH	3.000
□	14.000	BETA0	5.000	BETAC	.600
		PHI	.000	OY	.000
		DX	7.500	ALPHAC	10.000
			.000		8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

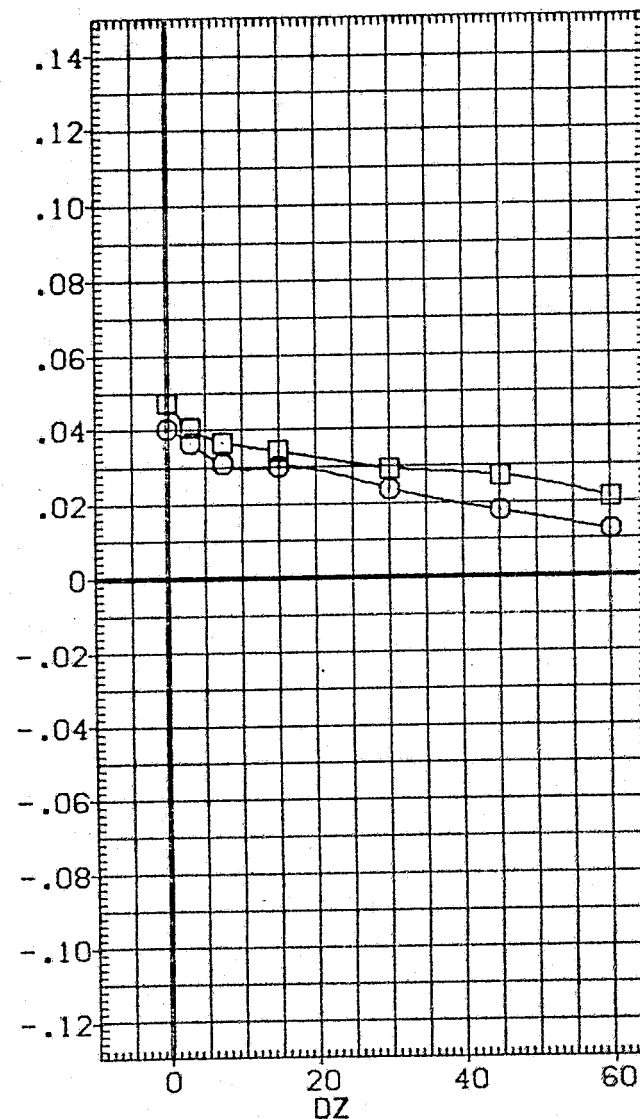
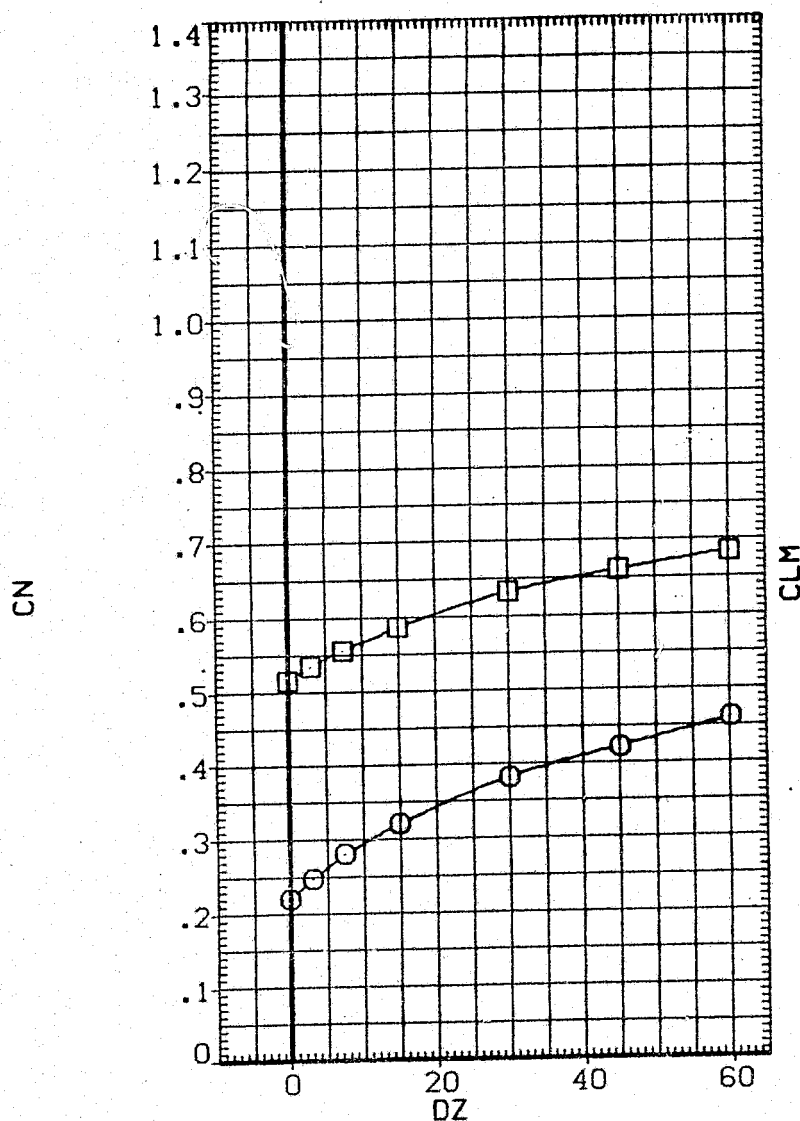


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN090)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	.000
		PHI	7.500	DY	10.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

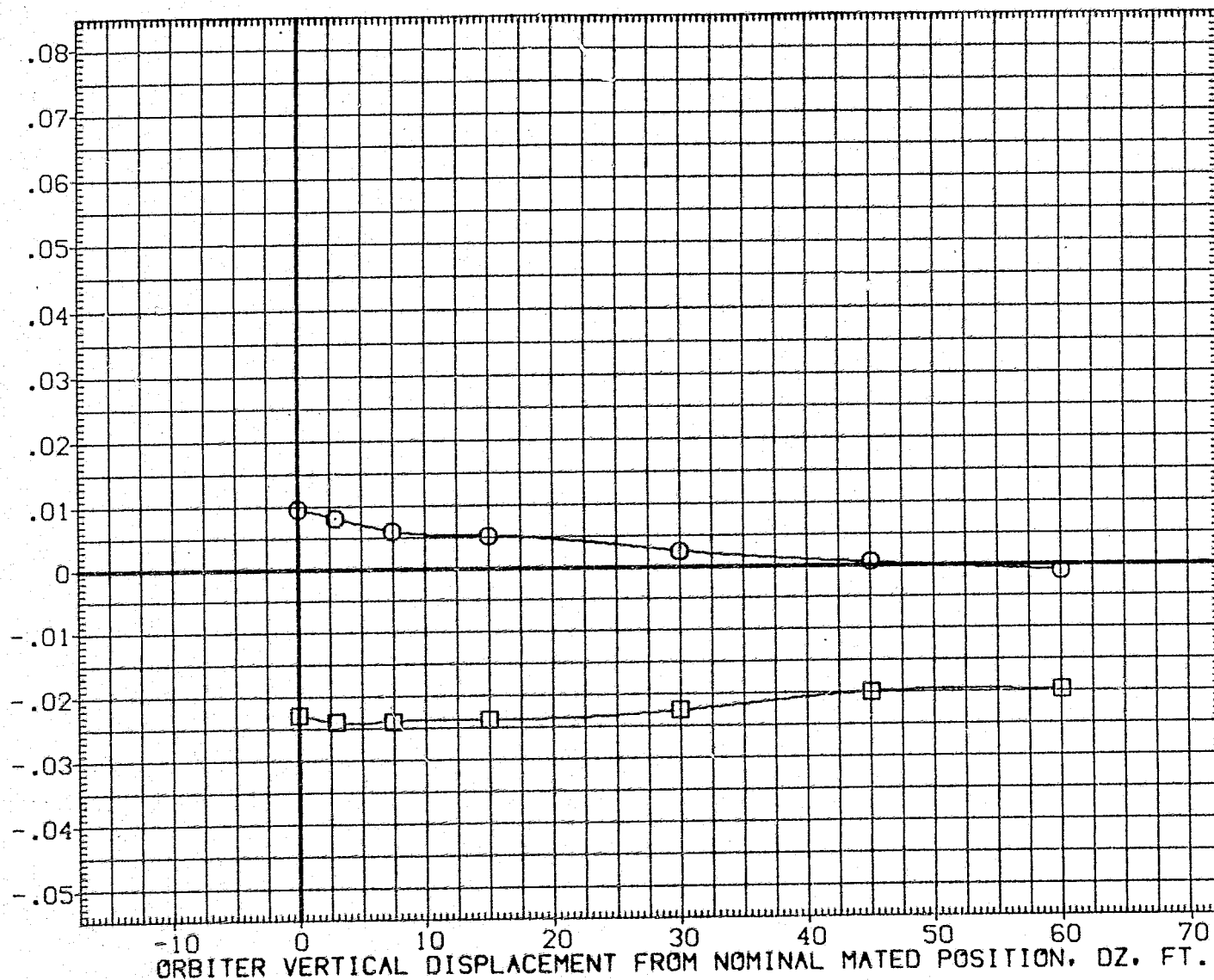


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN090)

SYMBOL	ALPHA0	PARAMETRIC VALUES
□	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

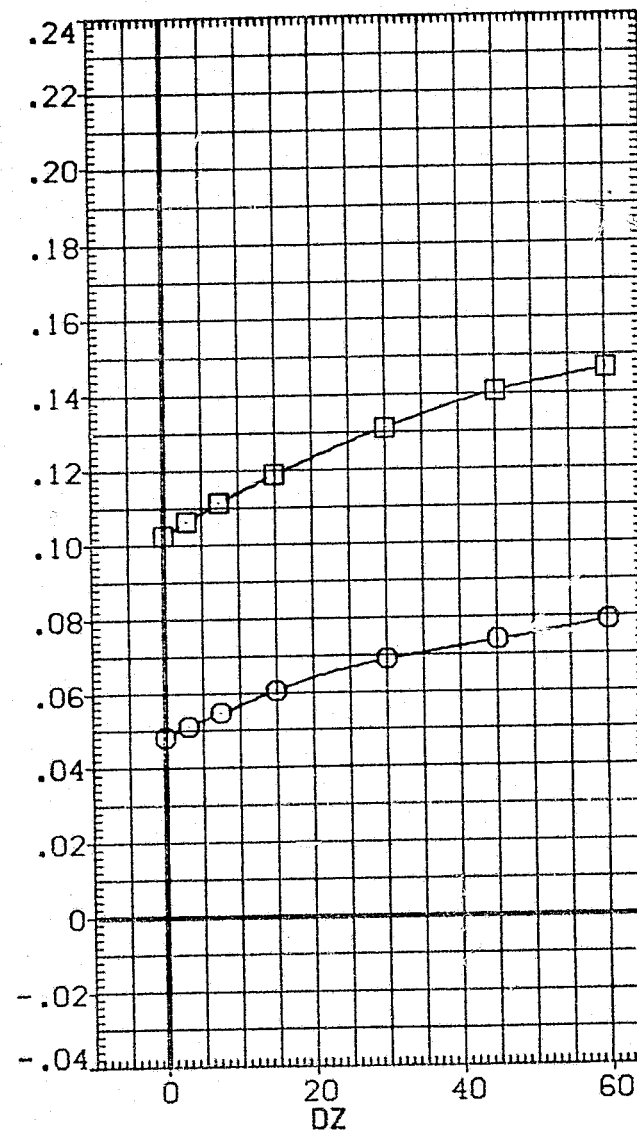
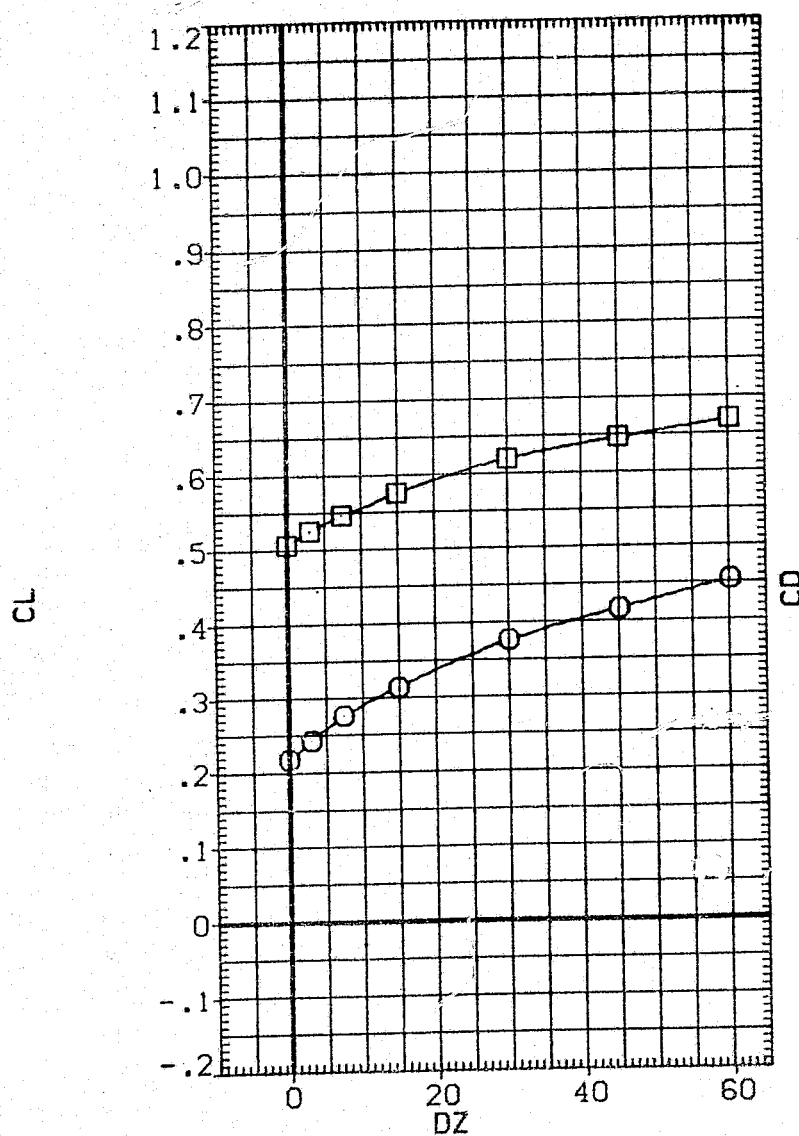


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN090)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	14.000	ELV-IB	.000	ELV-BB	3.000
○			ELEVON	5.000	MACH	.800
□			BETA0	.000	BETAC	.000
			PHI	7.500	DY	10.000
			DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

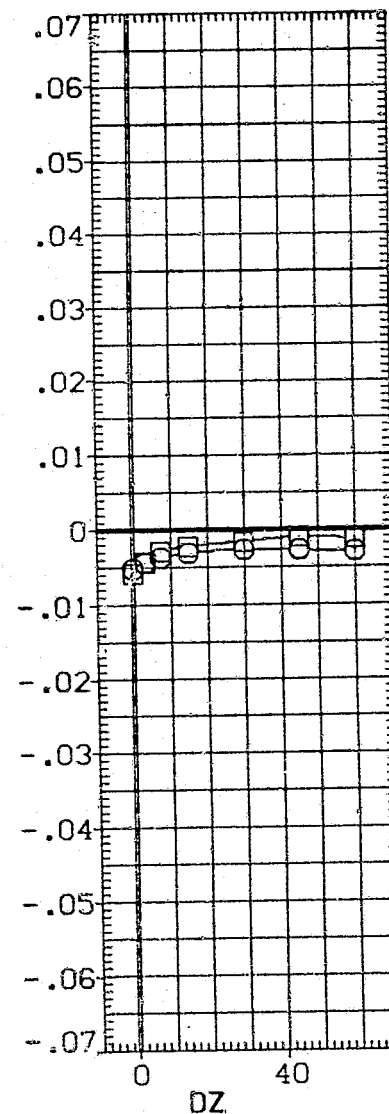
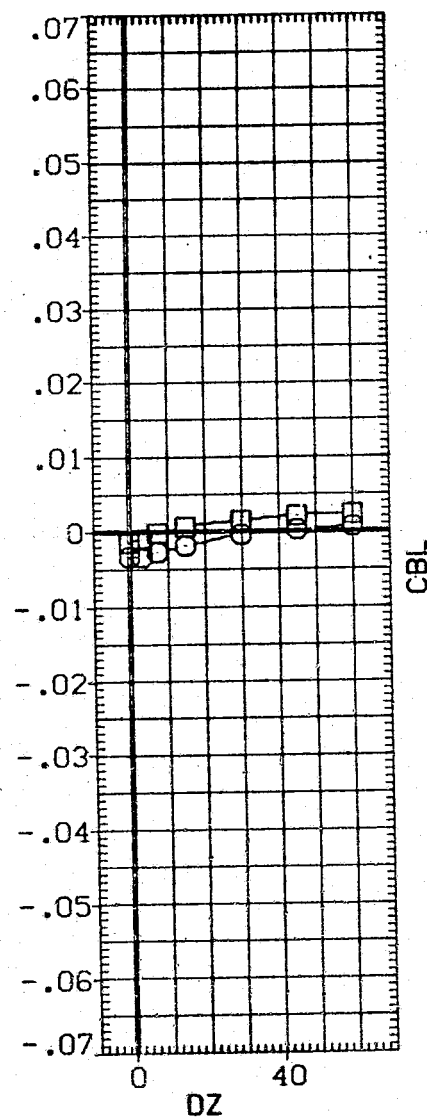
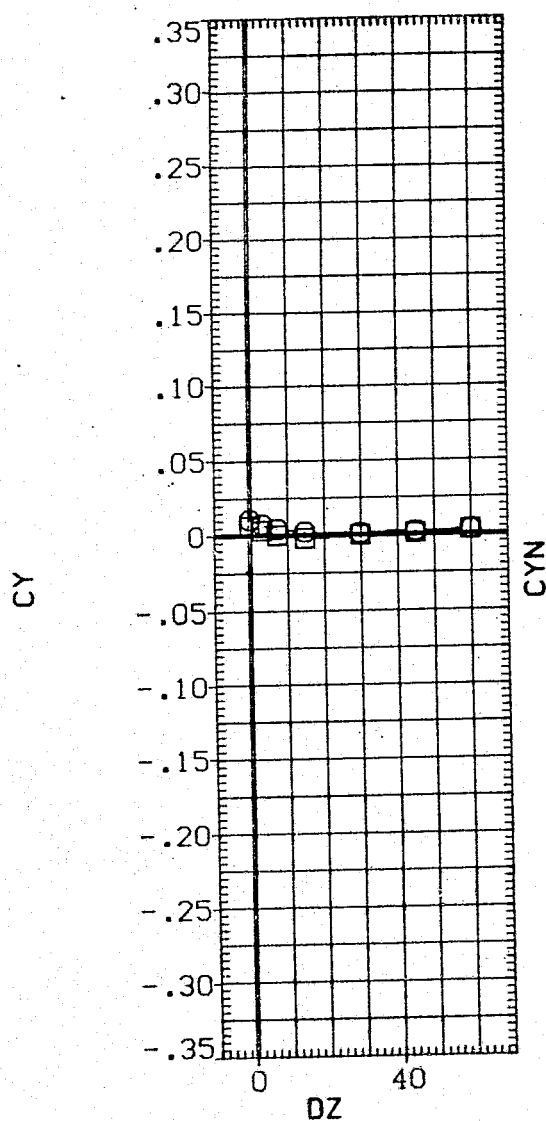


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL
○
□

ALPHA0
10.000
14.000

ALPHAC
ELV-18
ELEVON
PHI
DY

PARAMETRIC VALUES

8.000 BETAC .000
.000 ELV-08 3.000
5.000 MACH .600
7.500 DX .000
10.000 BETA0 .000

REFERENCE INFORMATION

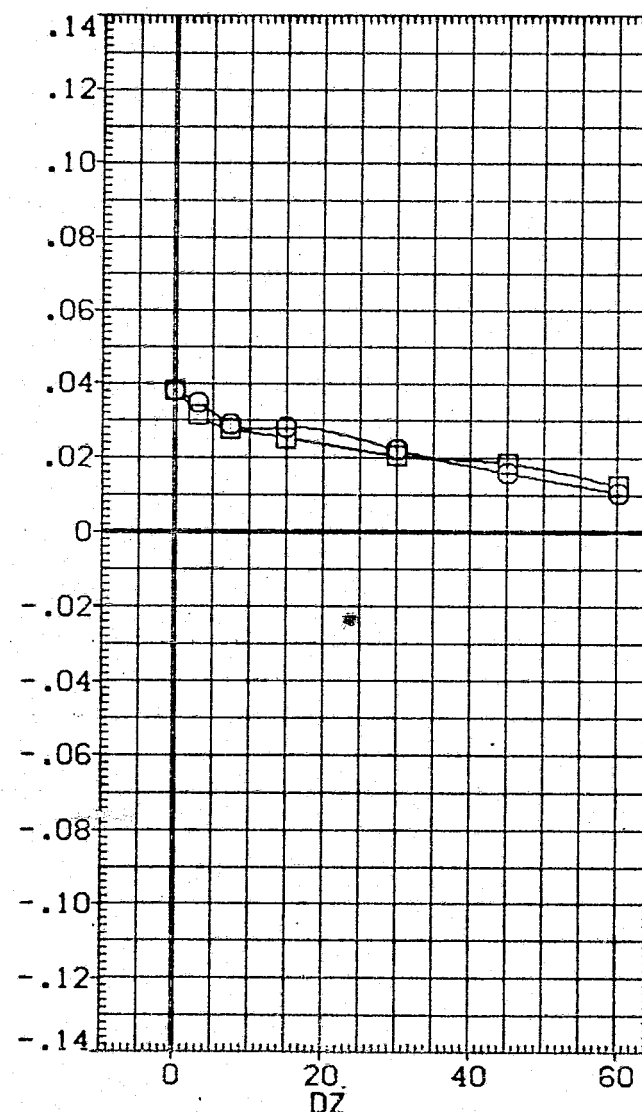
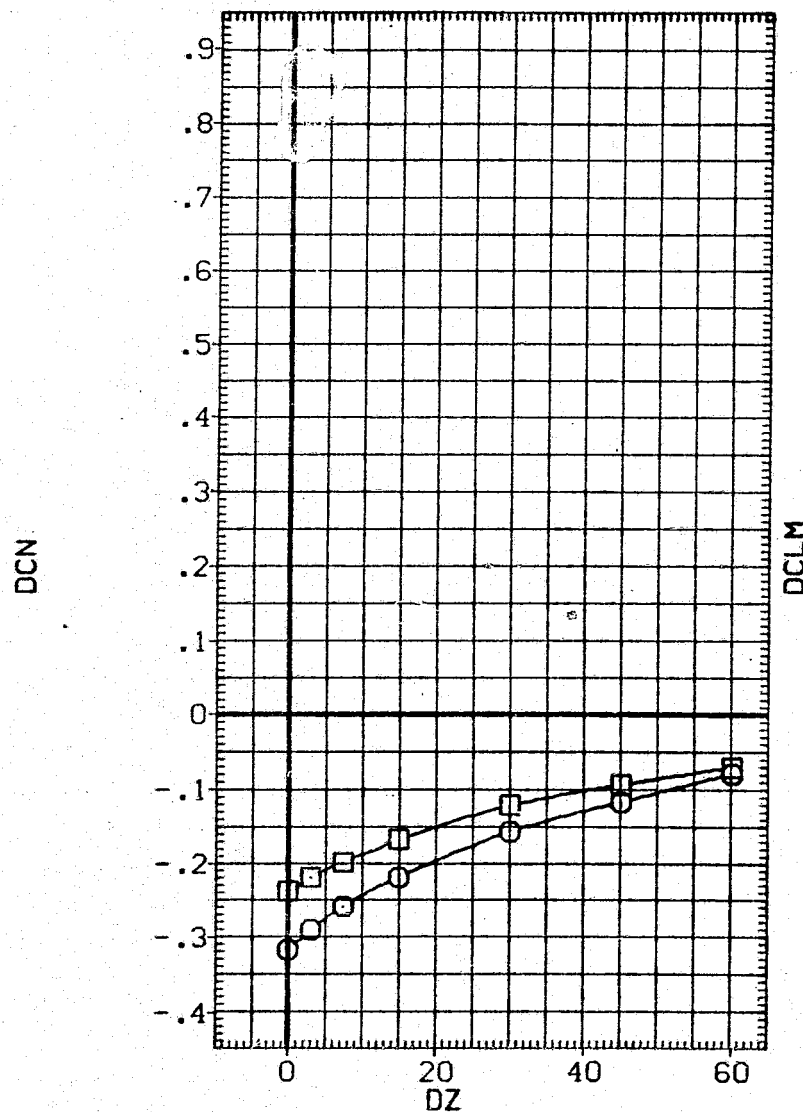
SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (090 - 010) (VGN090)

SYMBOL	PARAMETRIC VALUES
○	ALPHAC 8.000 BETAC .000
□	ELV-1B .000 ELV-0B 3.000
	ELEVON 5.000 MACH .600
	PHI 7.500 DX .000
	DY 10.000 BETAG .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

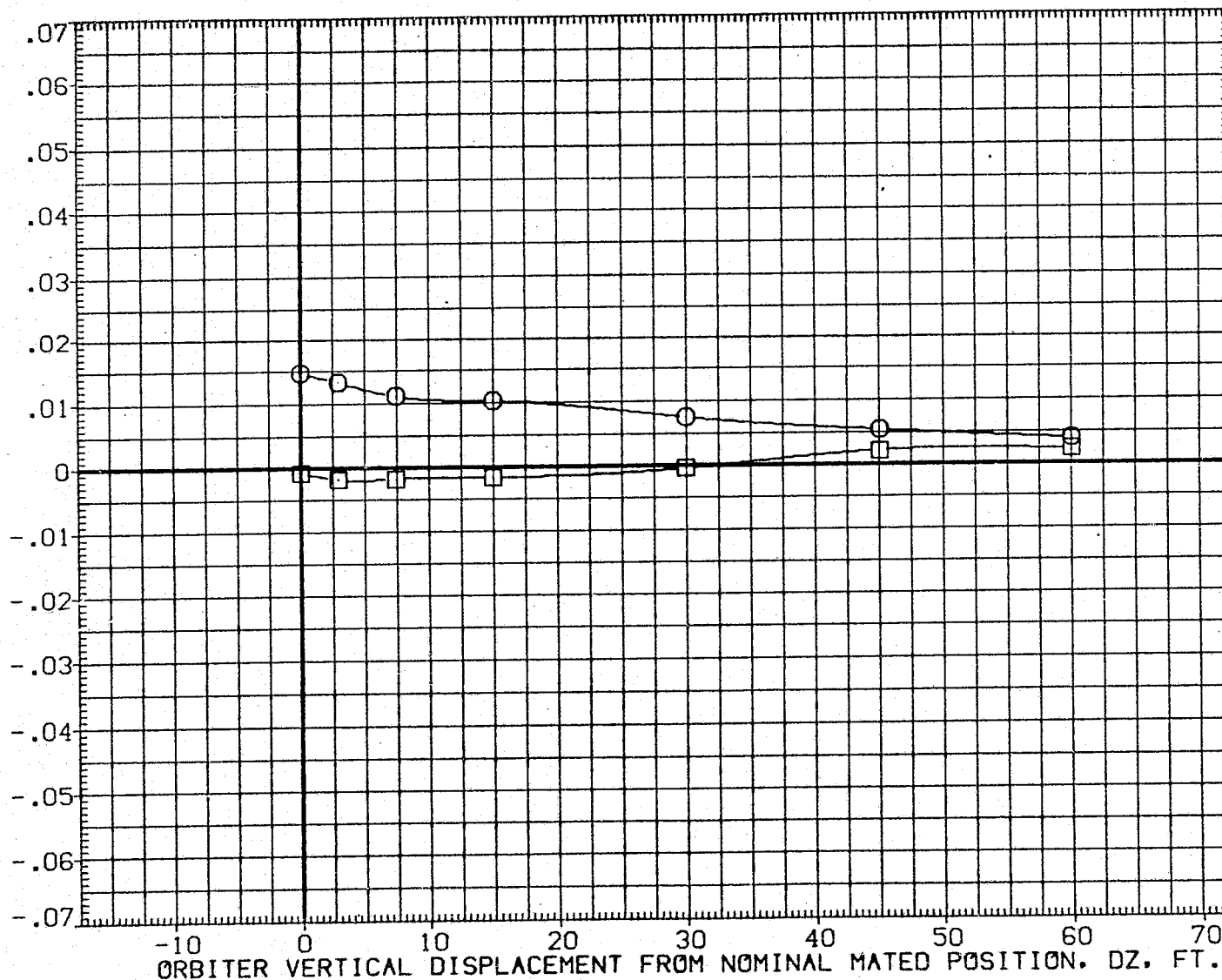


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHA0

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

7.500

10.000

BETAC

ELV-CB

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

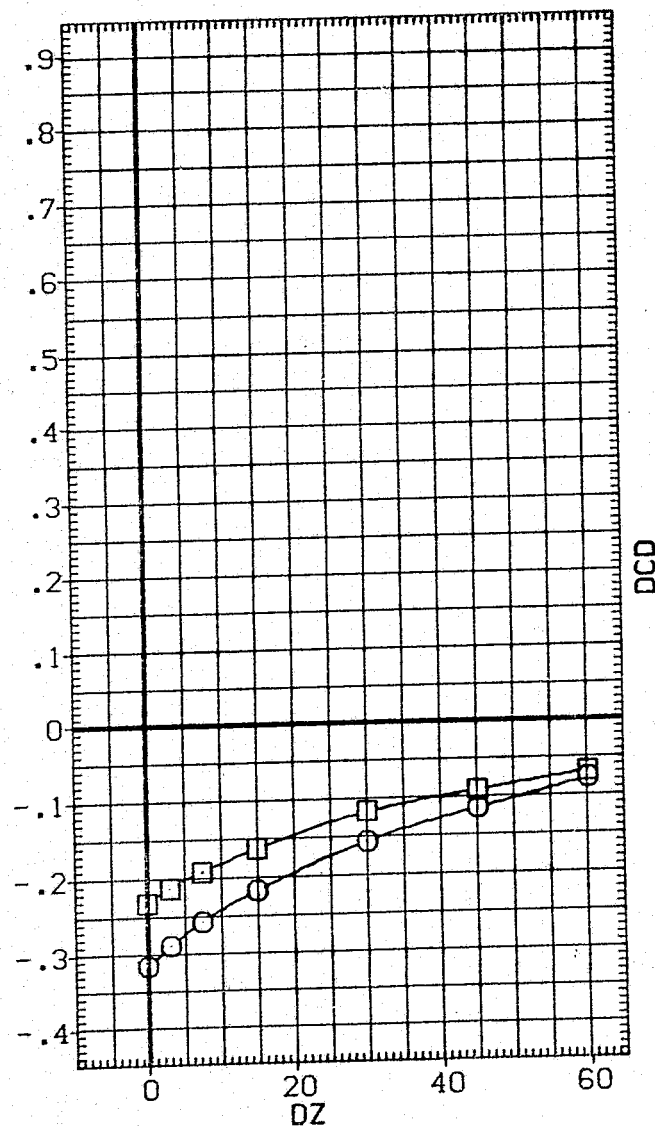
IN.

IN.X0

IN.Y0

IN.Z0

DCL



DCD

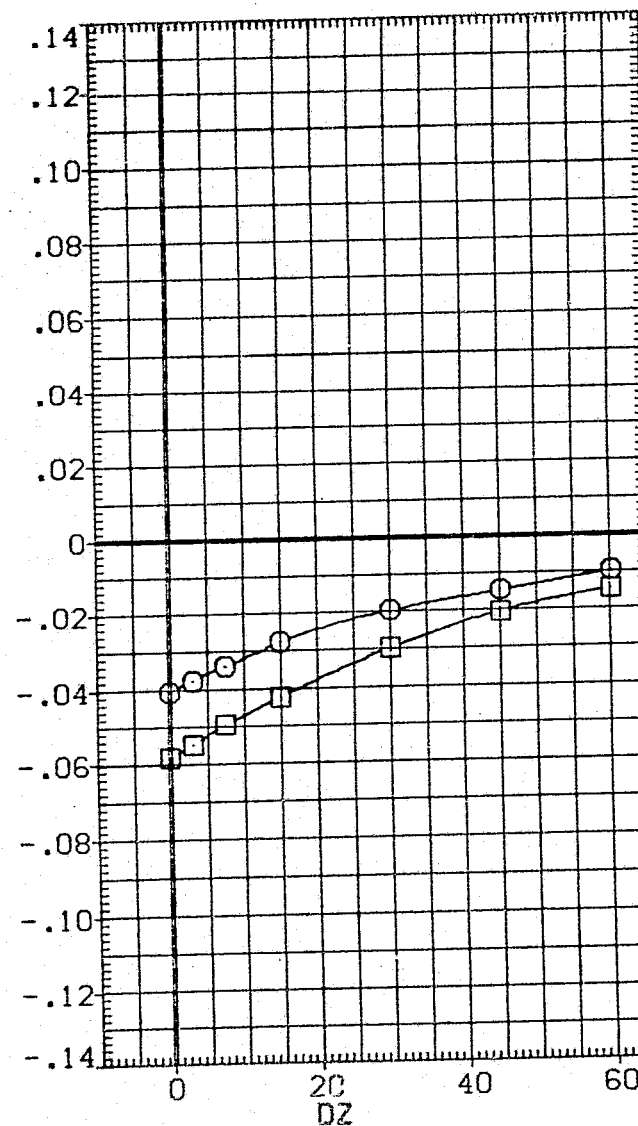


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN089)

SYMBOL	ALPHA	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

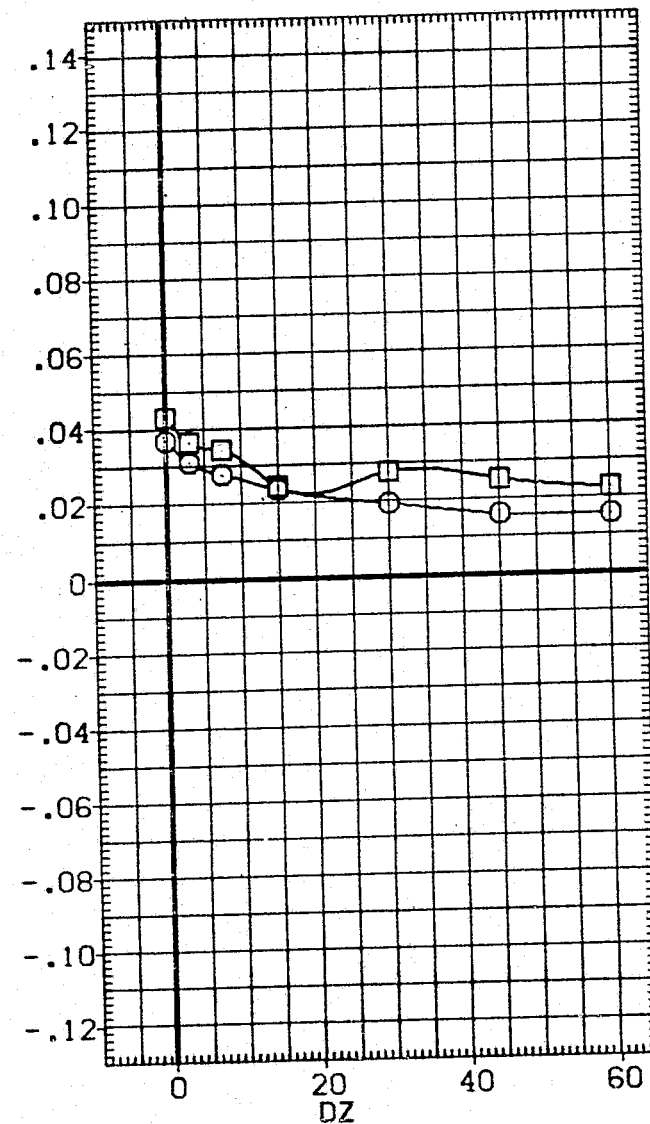
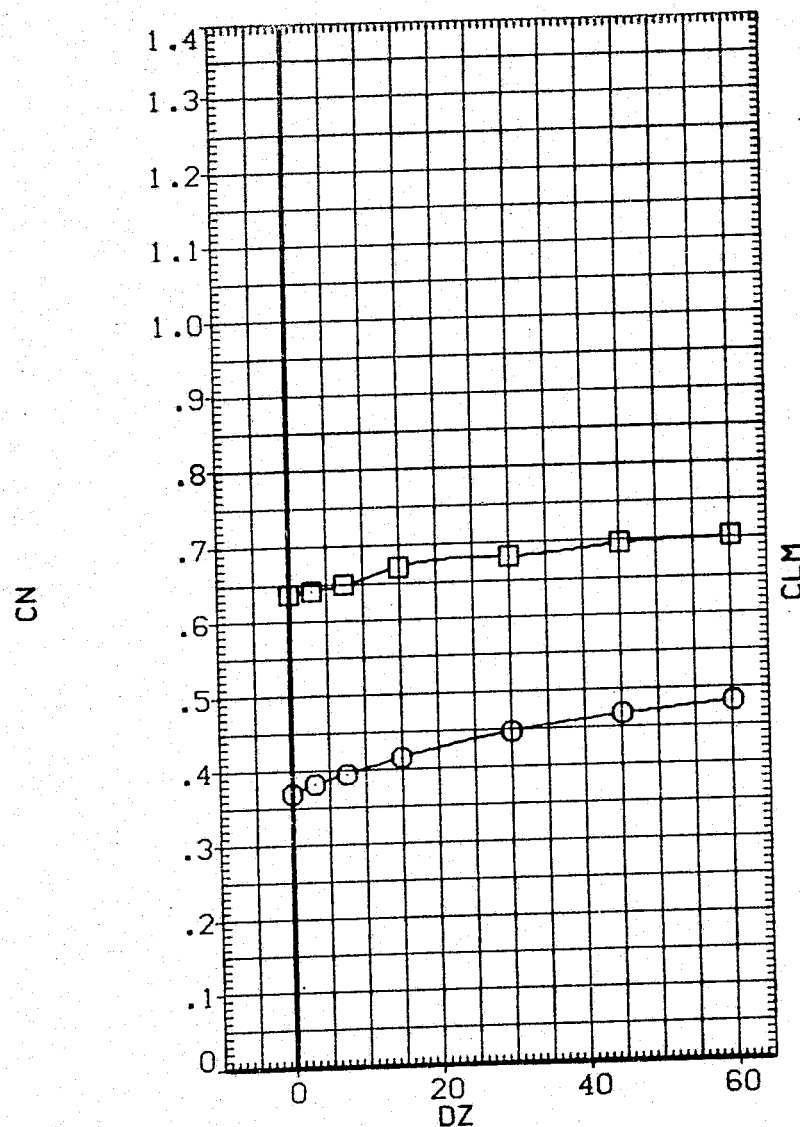


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	.000		3.000
□	14.000	5.000		.600
		.000		.000
		7.500		10.000
		10.000		4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

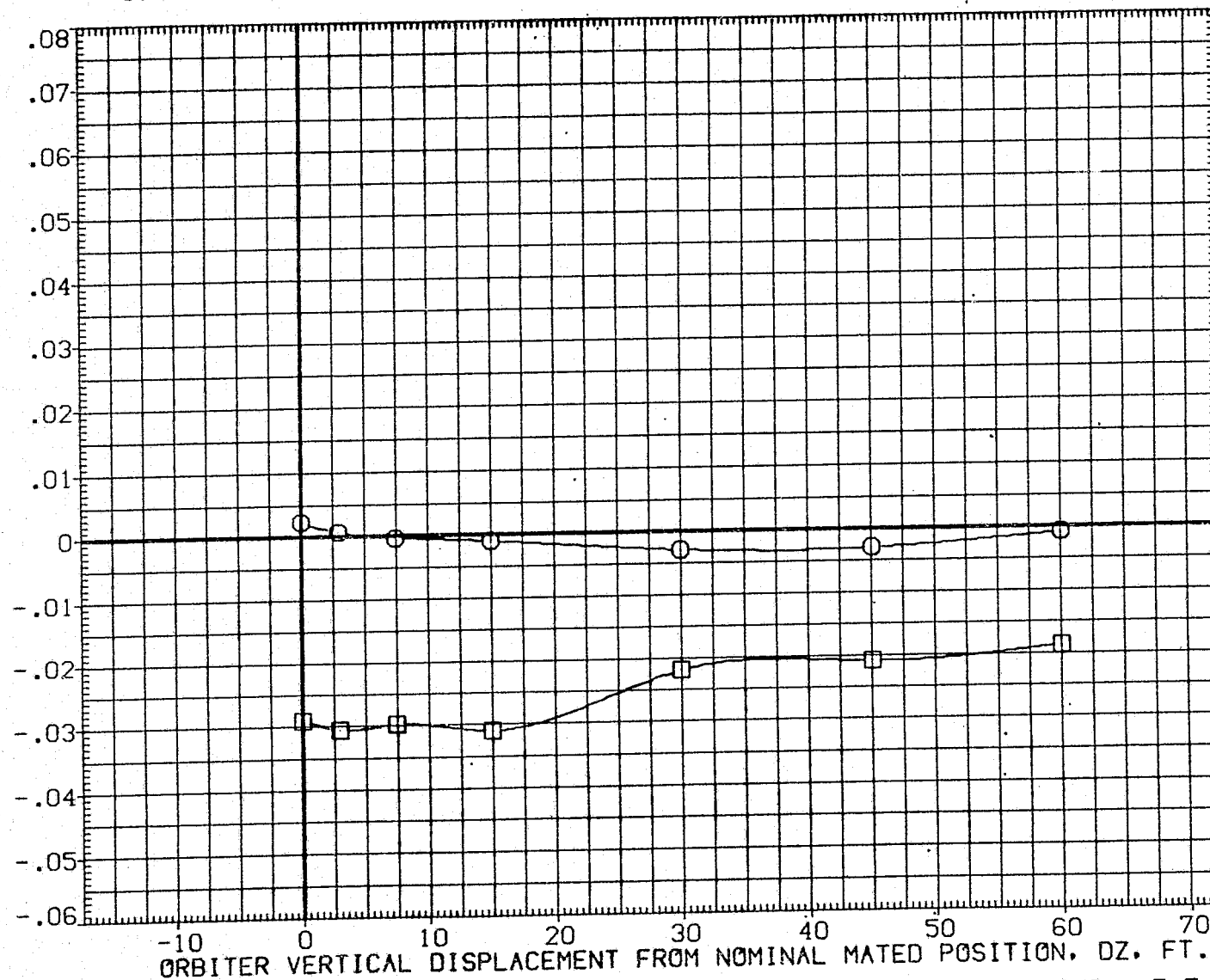


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN089)

SYMBOL



ALPHA

14.000

PARAMETRIC VALUES

ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
BETA0	.000	BETAC	.000
PHI	7.500	DY	10.000
DX	10.000	ALFHAC	4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

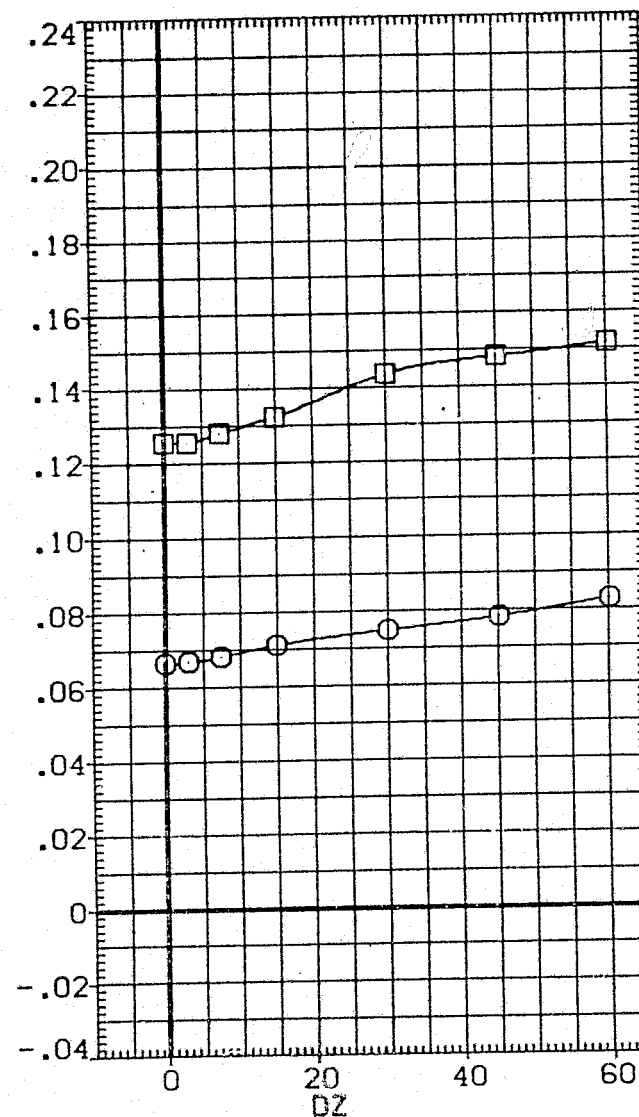
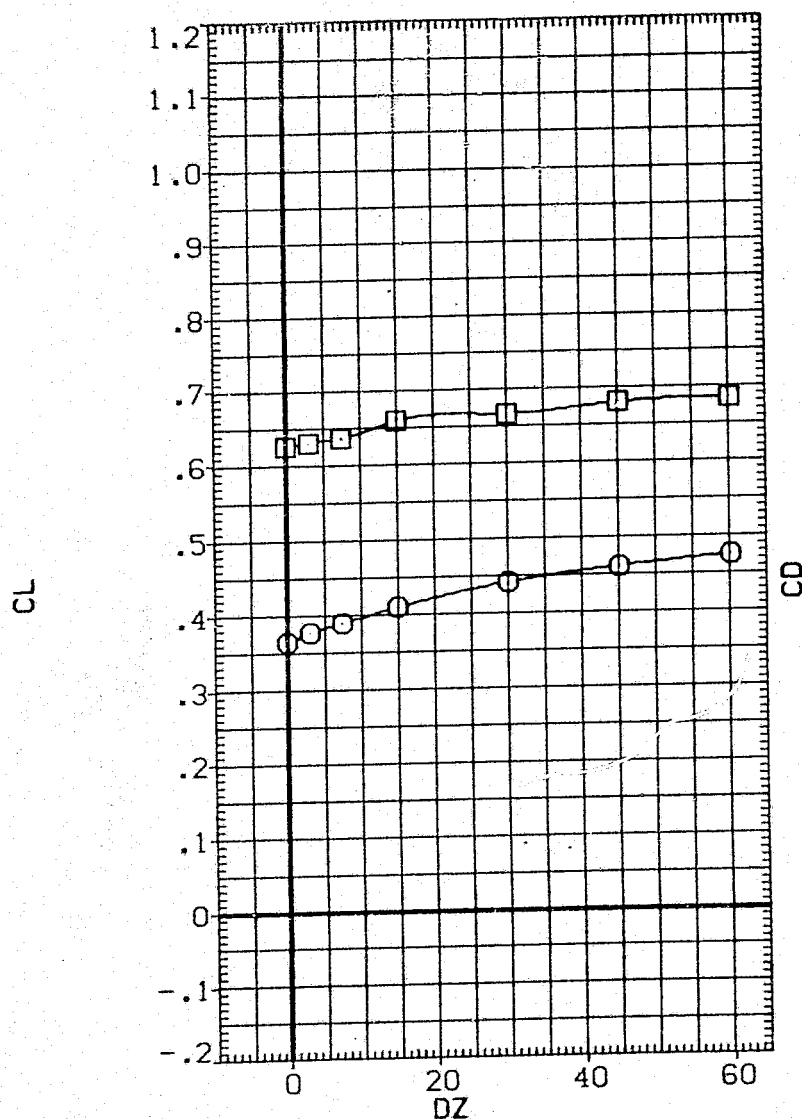


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN089)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-1B .000	ELV-0B 3.000
□	14.000	ELEVON 5.000	MACH .600
		BETAS .000	BETAC .000
		PHI 7.500	DY 10.000
		DX 10.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

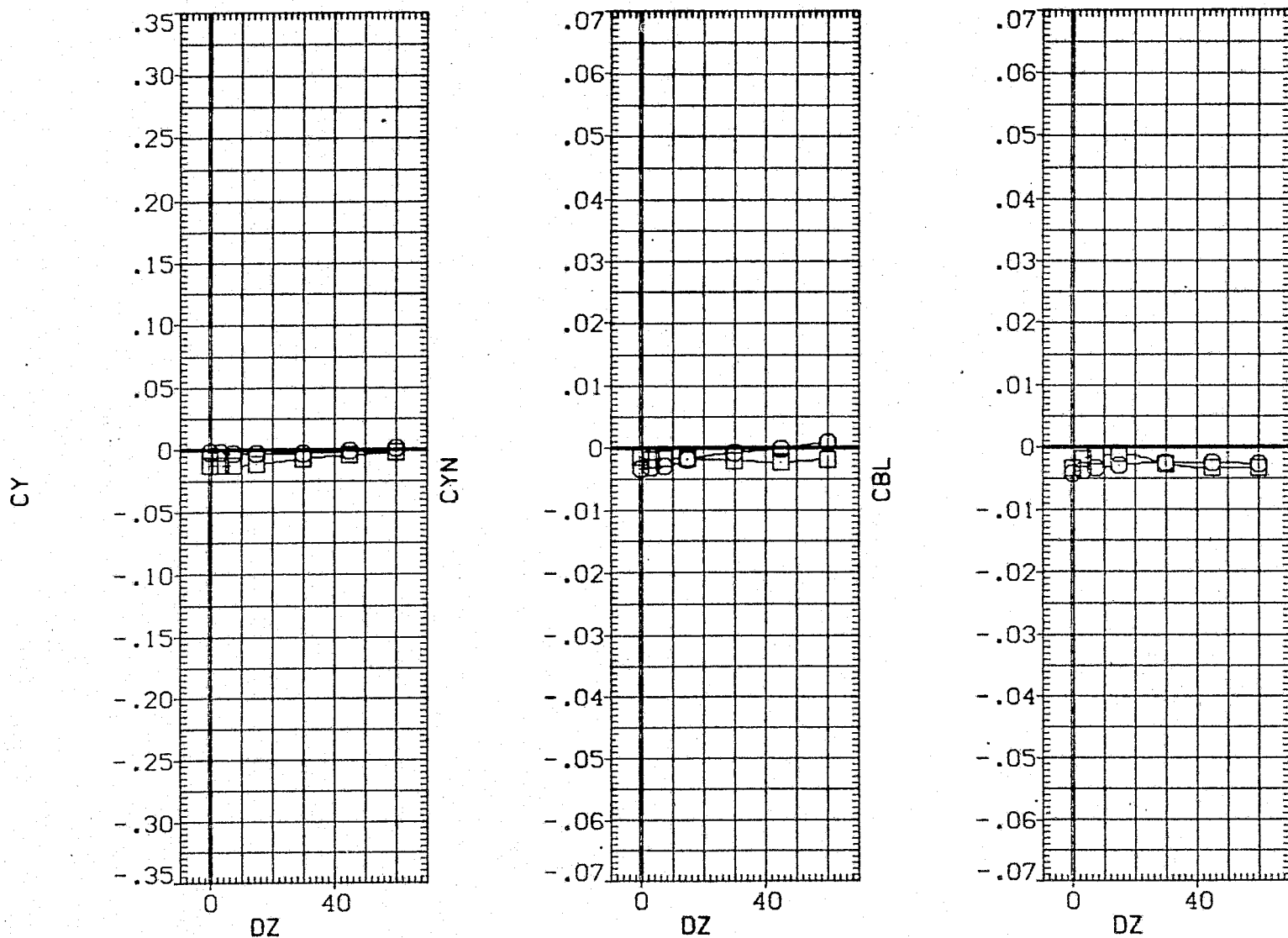


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (089 - 010) (VGNO89)

SYMBOL	VALUE	PARAMETRIC VALUES
○	11.000	ALPHAC 4.000 BETAC .000
□	11.000	ELV-IB .000 ELV-OB 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 QX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.0100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

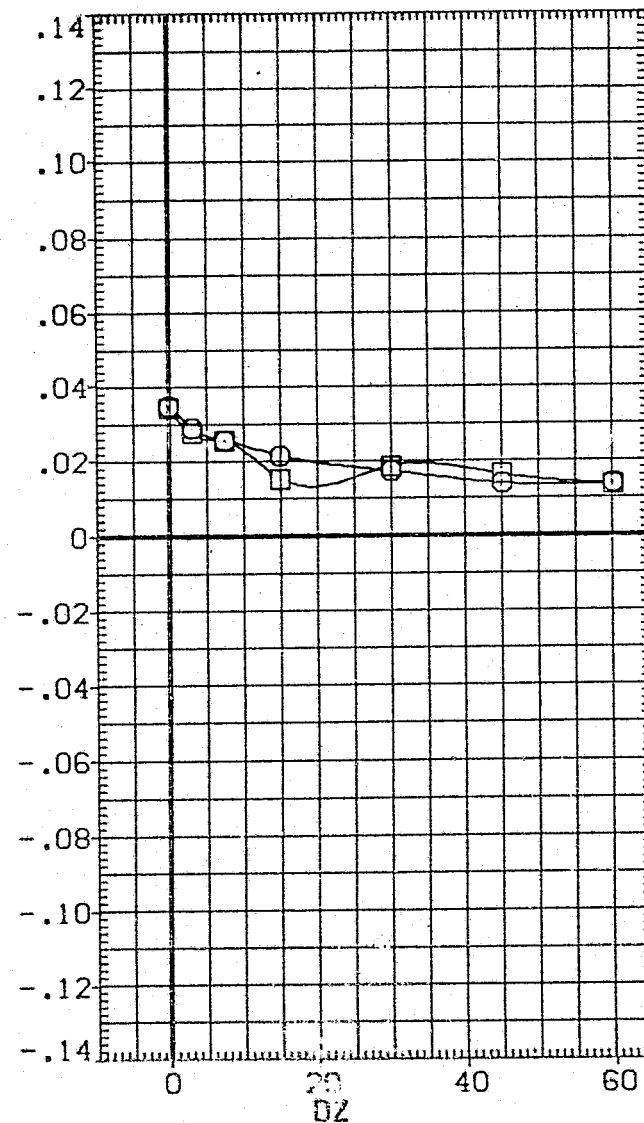
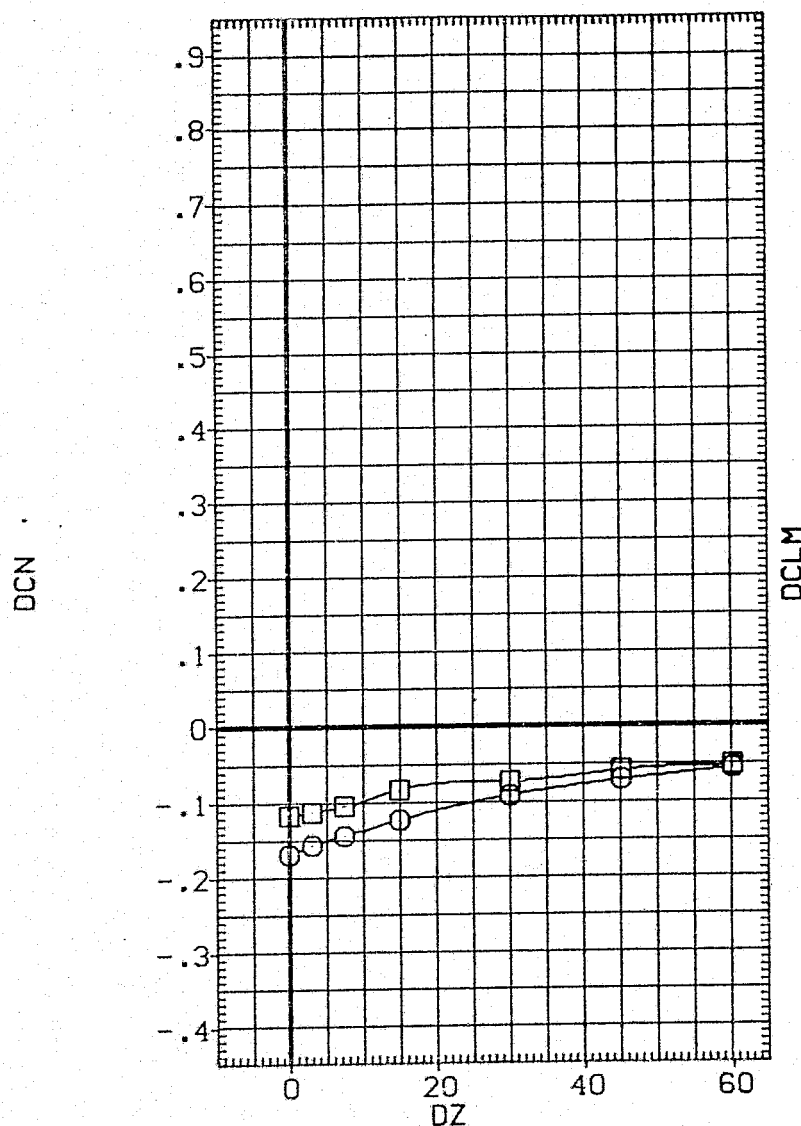


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL



ALPHAO

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

7.500

10.000

BETAC

ELV-OB

MACH

DX

BETAO

.000

3.000

.600

10.000

.600

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

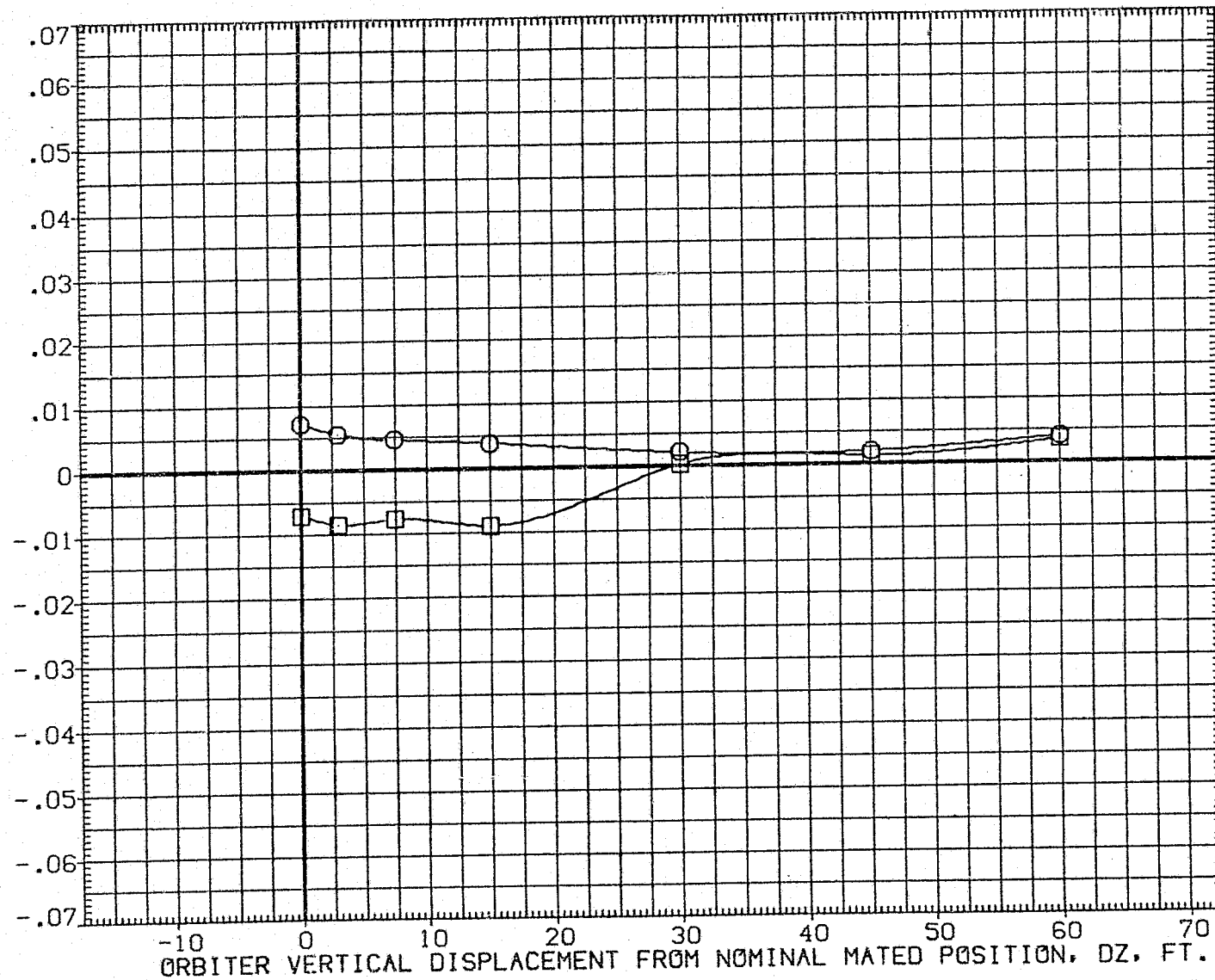


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (089 - 010)(VGN089)

SYMBOL	LP	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

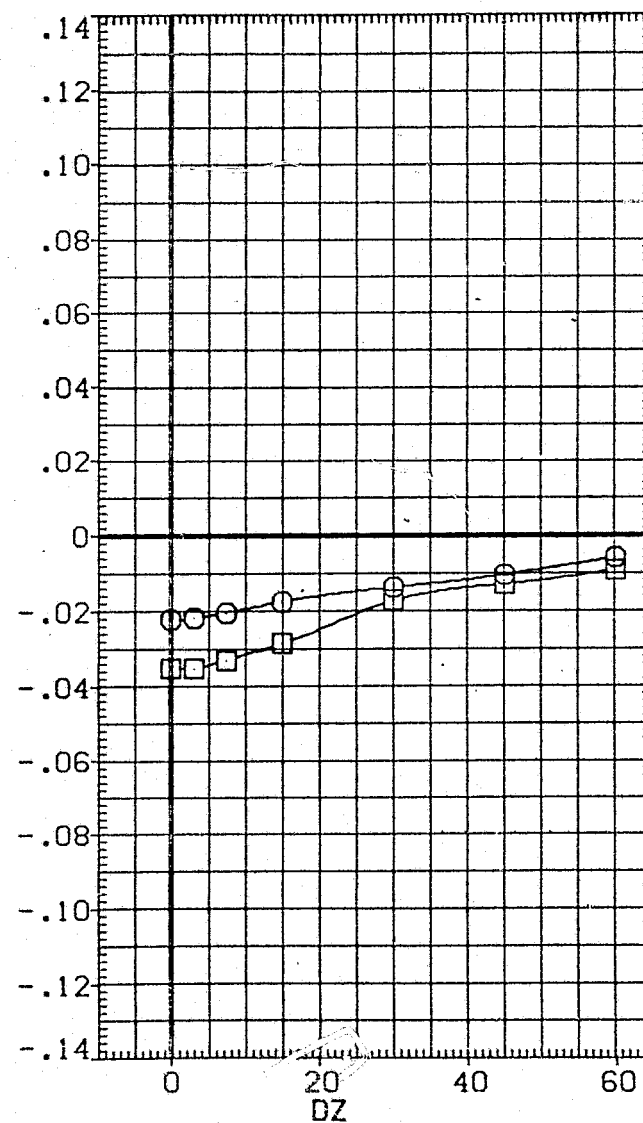
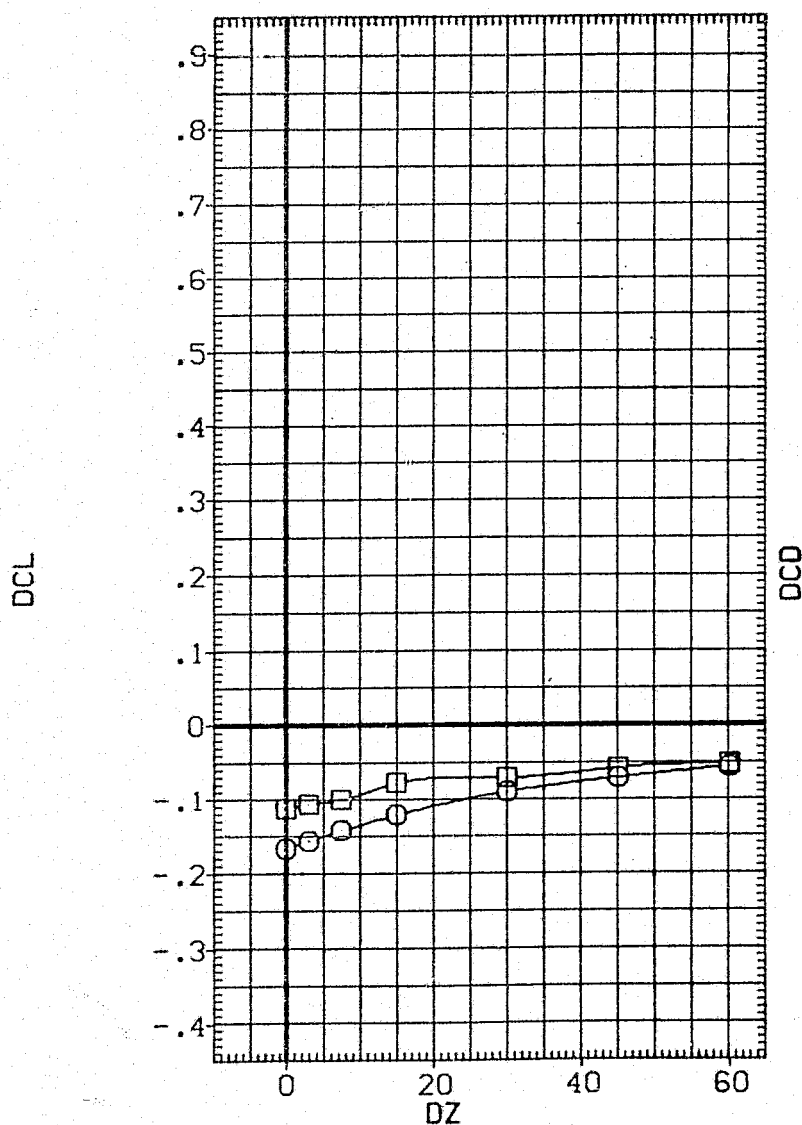


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6500	IN.
XMRP	1109.0000	IN.XC
YMRP	.0000	IN.YO
ZMRP	375.0000	IN.ZO
SCALE	.0300	

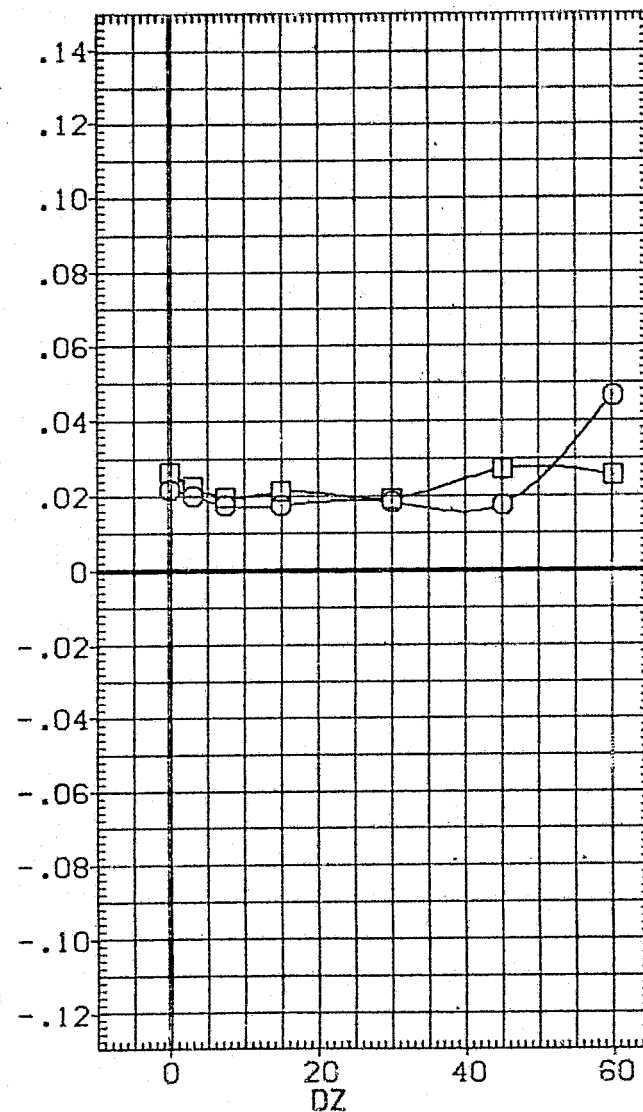
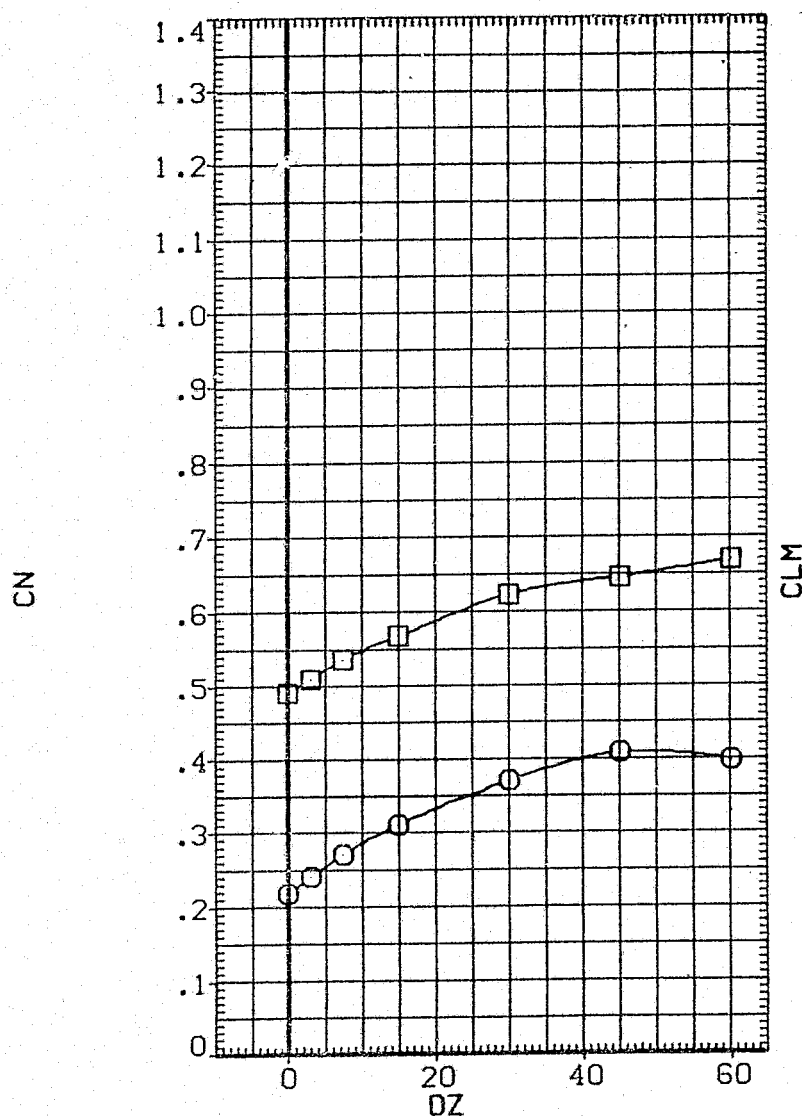


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN091)

SYMBOL		PARAMETRIC VALUES			
ALPHA0	0.000	ELV-1B	0.000	ELV-0B	3.000
BETA0	0.000	ELEVON	5.000	MACH	0.500
PHI	7.500	BETAC	0.000	BETAC	0.000
DX	10.000	DY	10.000	DY	10.000
		ALPHAC	8.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.0100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	0.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	0.0300	

AXIAL FORCE COEFFICIENT, CA

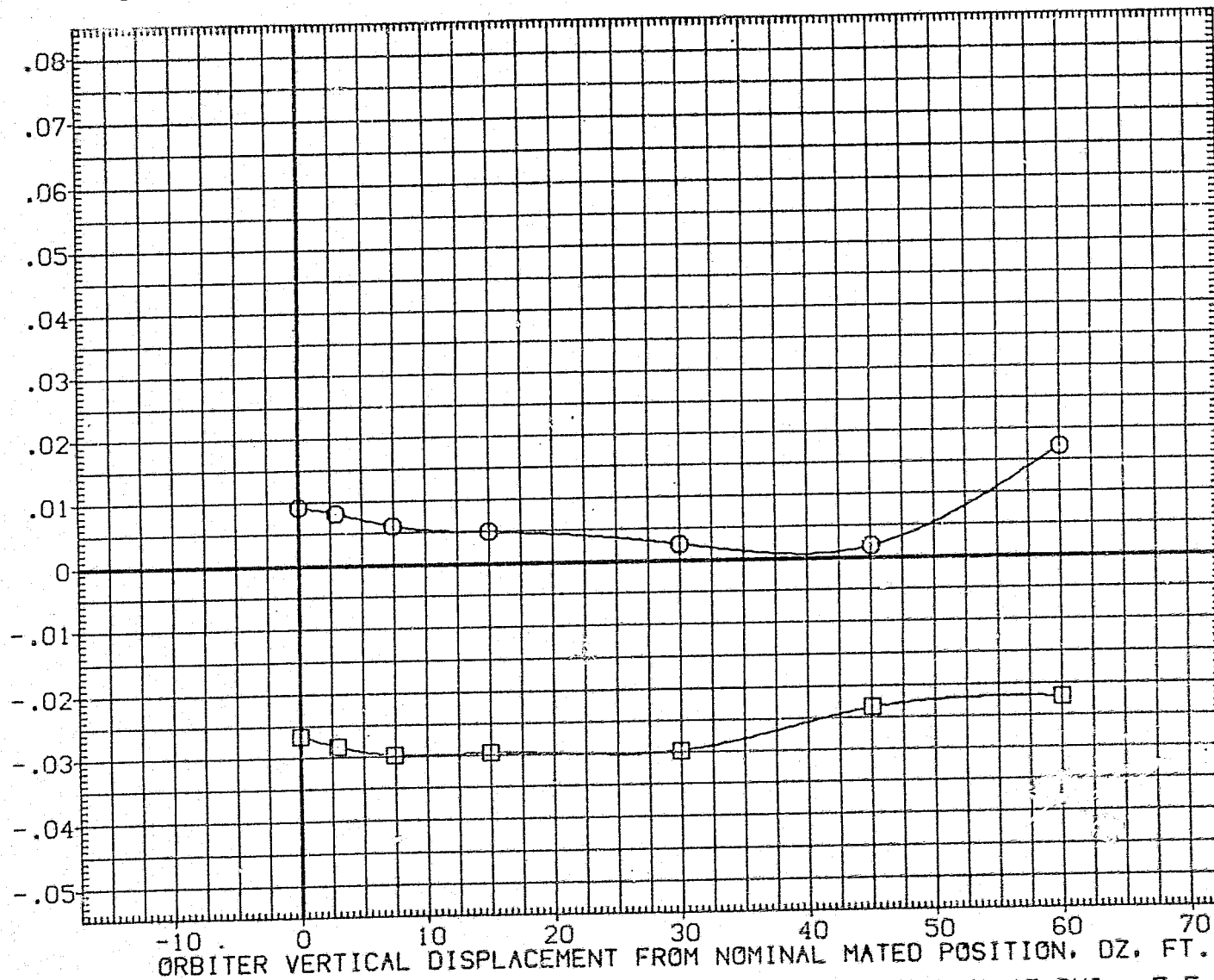


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN091)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC .000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.9100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

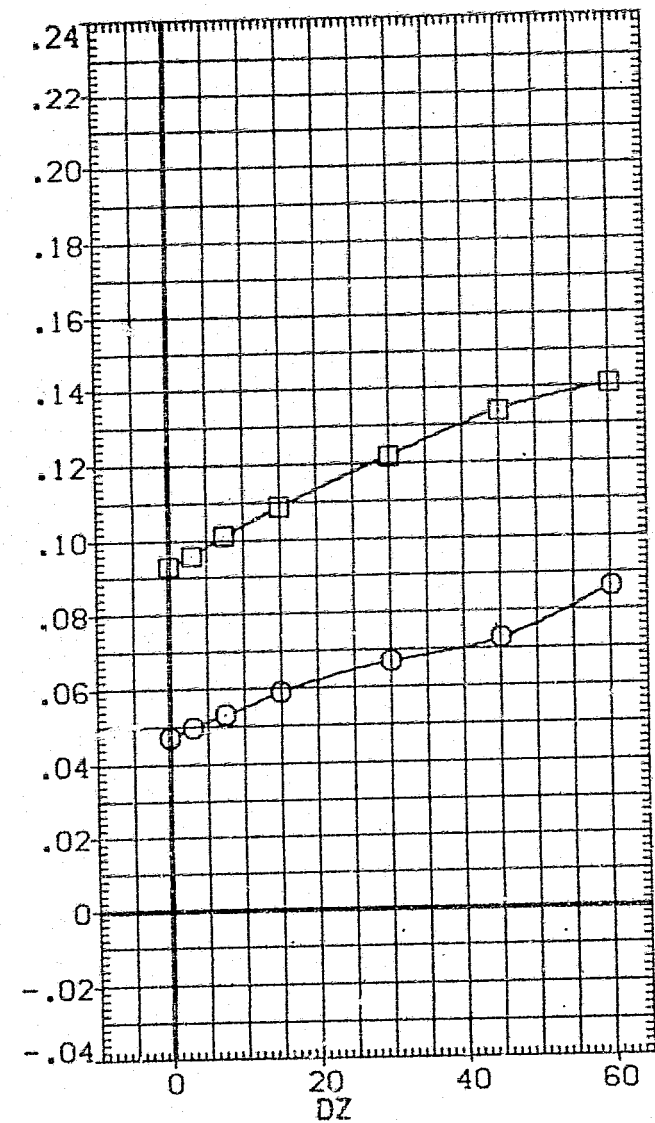
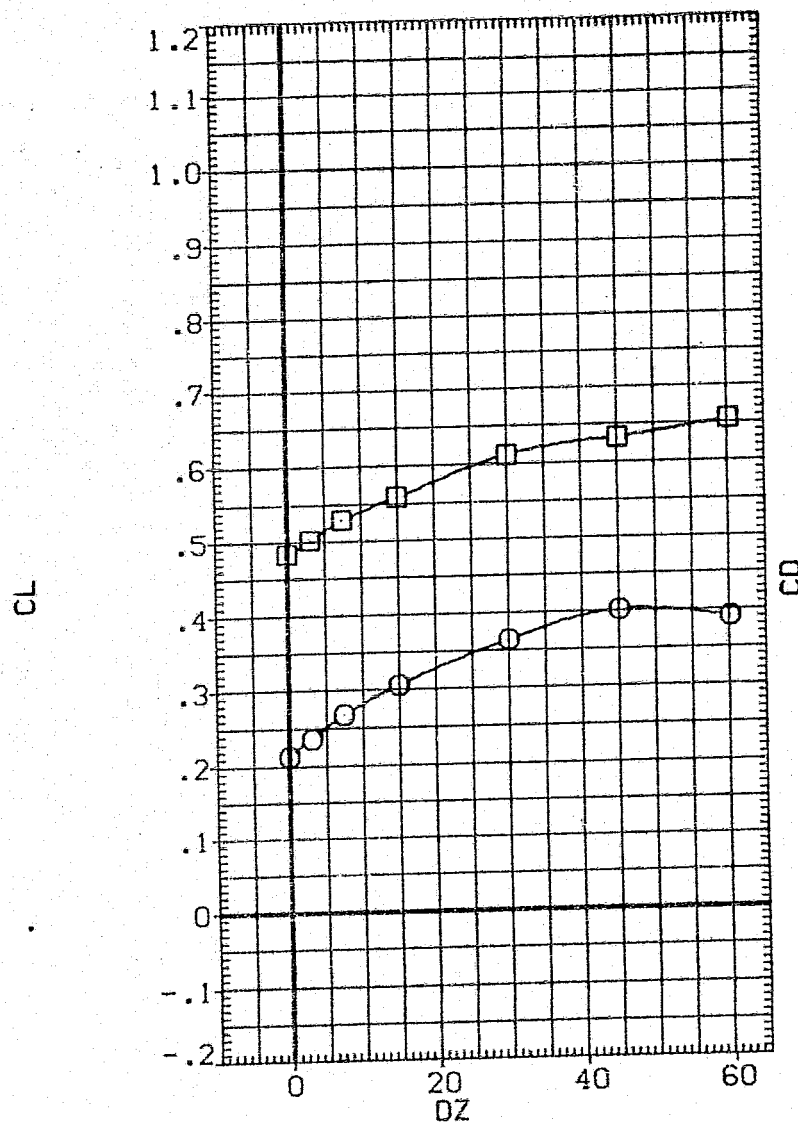


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN091)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	0.000	ELV-1B .000	ELV-0B 3.000
□	10.000	ELEVON 5.000	MACH .600
		BETA0 .000	BETAC .000
		PHI 7.500	DY 10.000
		DX 10.000	ALPHAC 8.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.9100	IN.
BREF	936.6800	IN.
YMRP	1109.0000	IN.X0
ZMRP	.0000	IN.Y0
SCALE	375.0000	IN.Z0

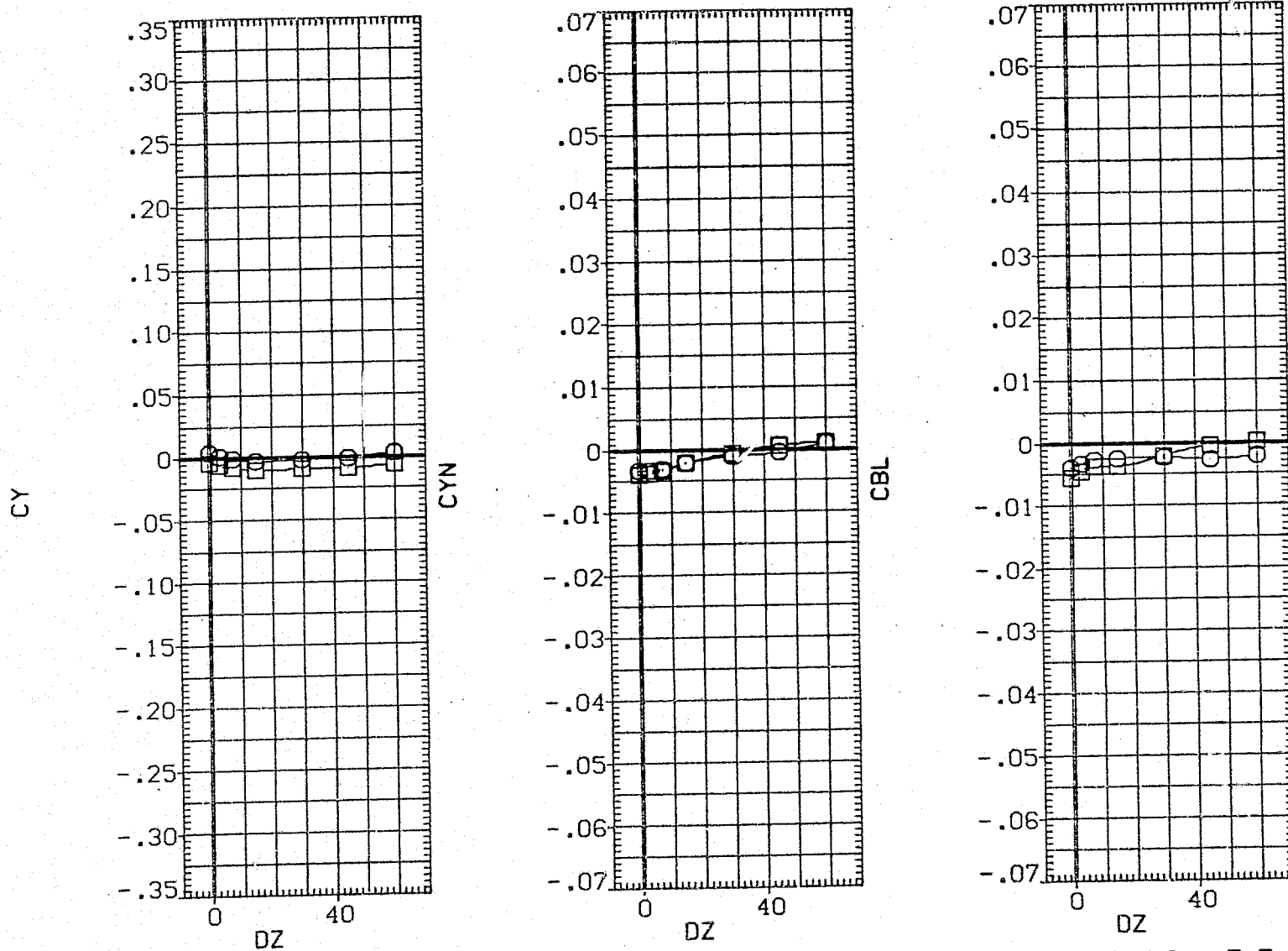


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (091 - 010) (VGN091)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000 BETAC

.000 ELV-08

5.000 MACH

7.500 DX

10.000 BETA0

.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN

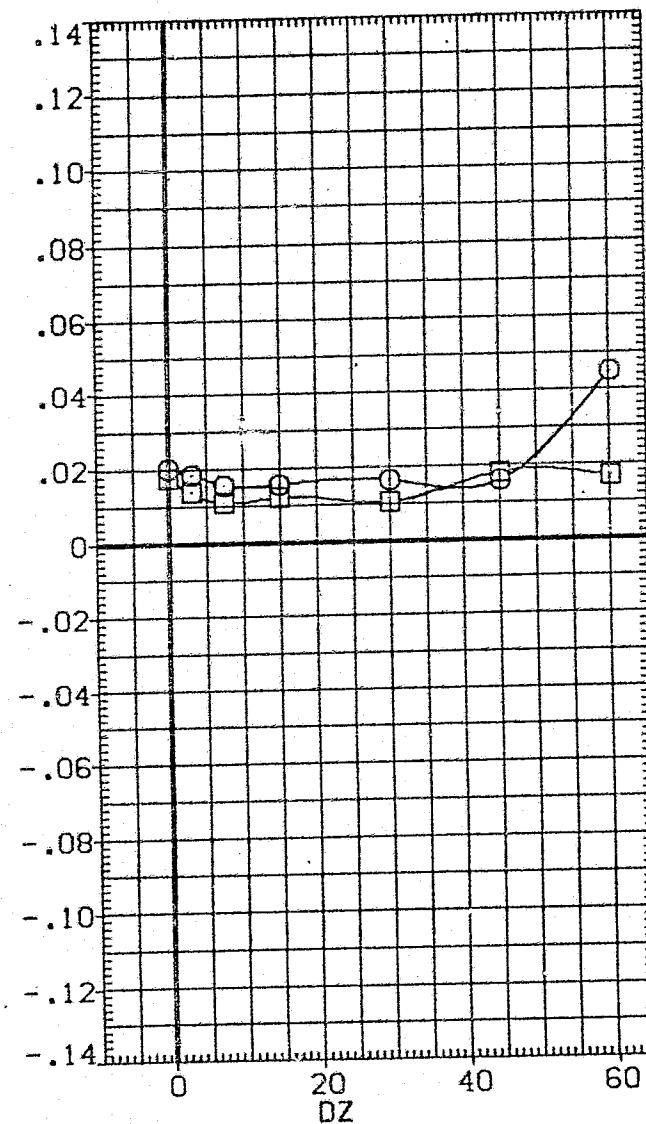
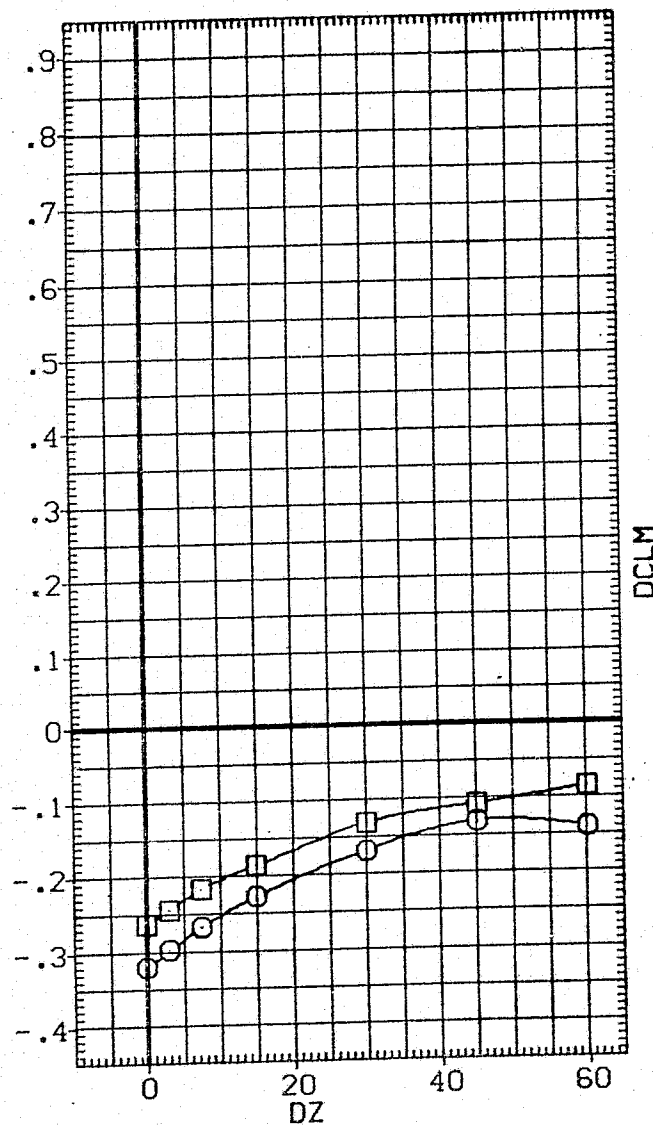


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (091 - 010) (VGN091)

SYMBOL

○
□

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	7.500	DX	10.000
DY	10.000	BETAO	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

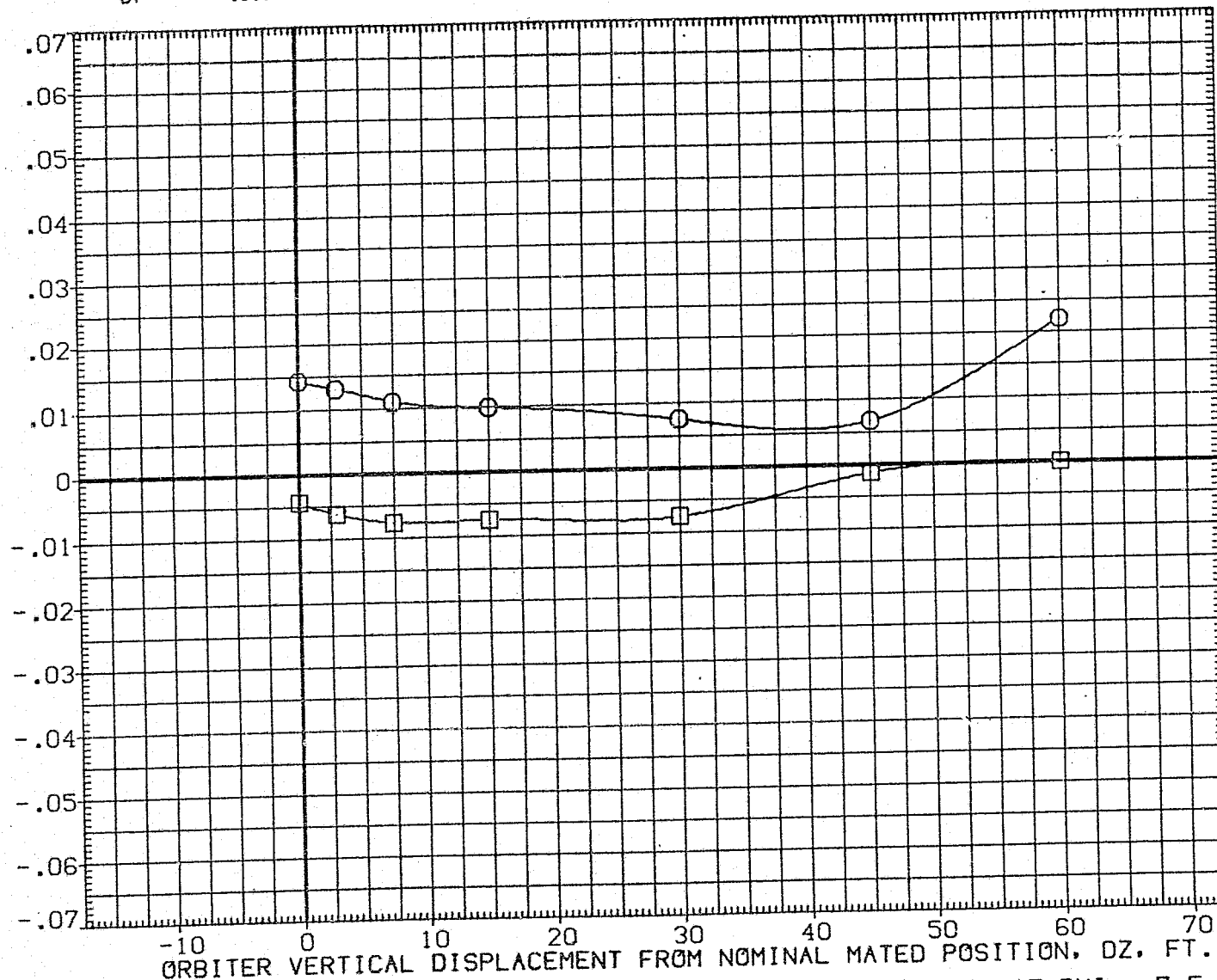


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

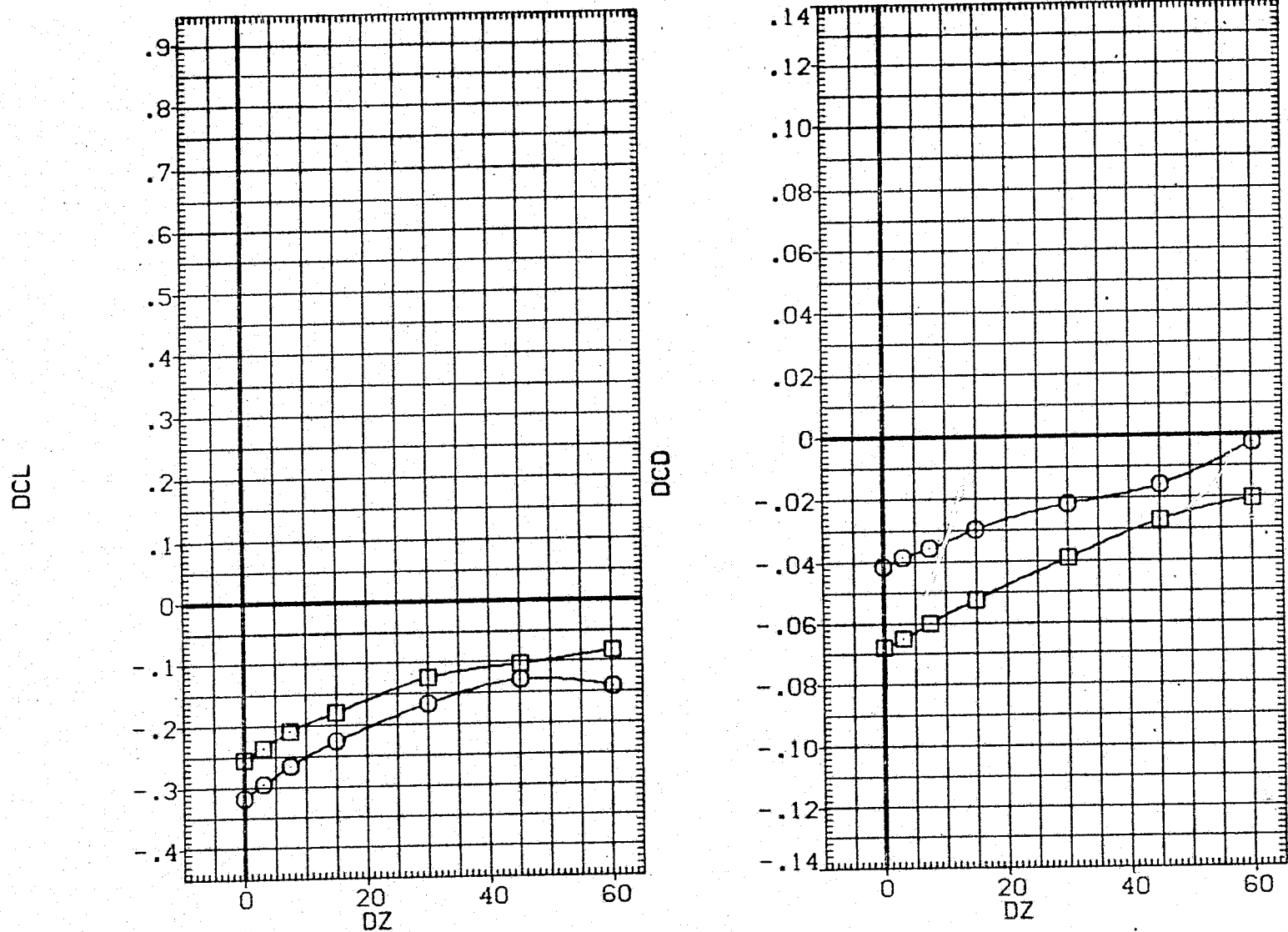


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN092)

SYMBOL	VALUE	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	10.000	ELEVON 5.000 MACH .600
		BETAD .000 BETAC 5.000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

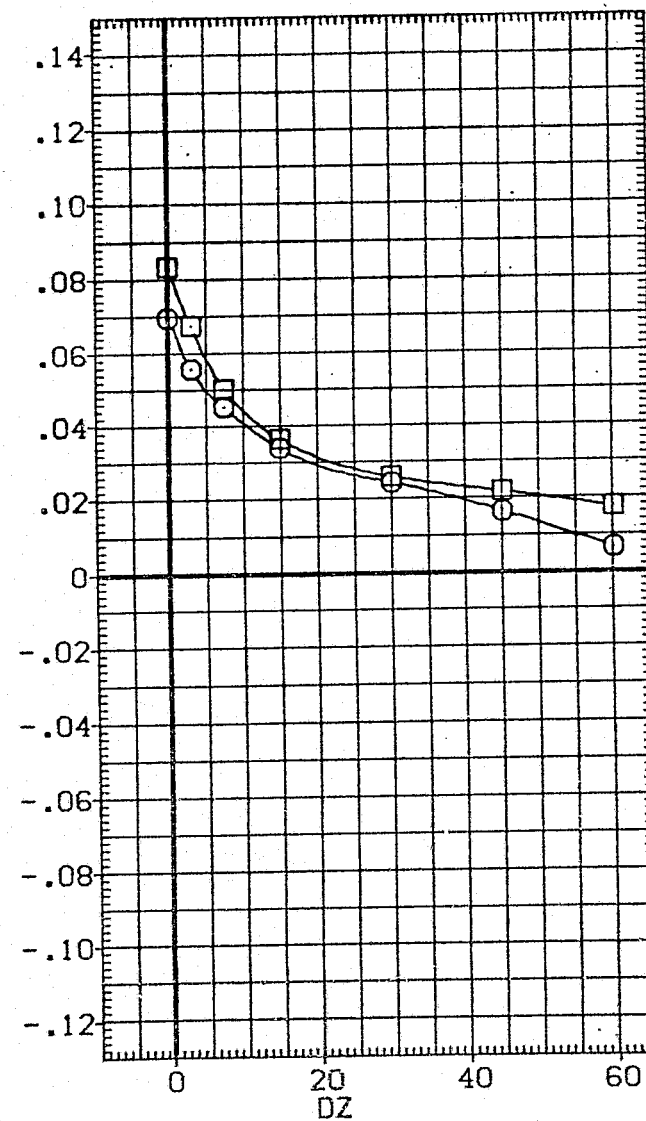
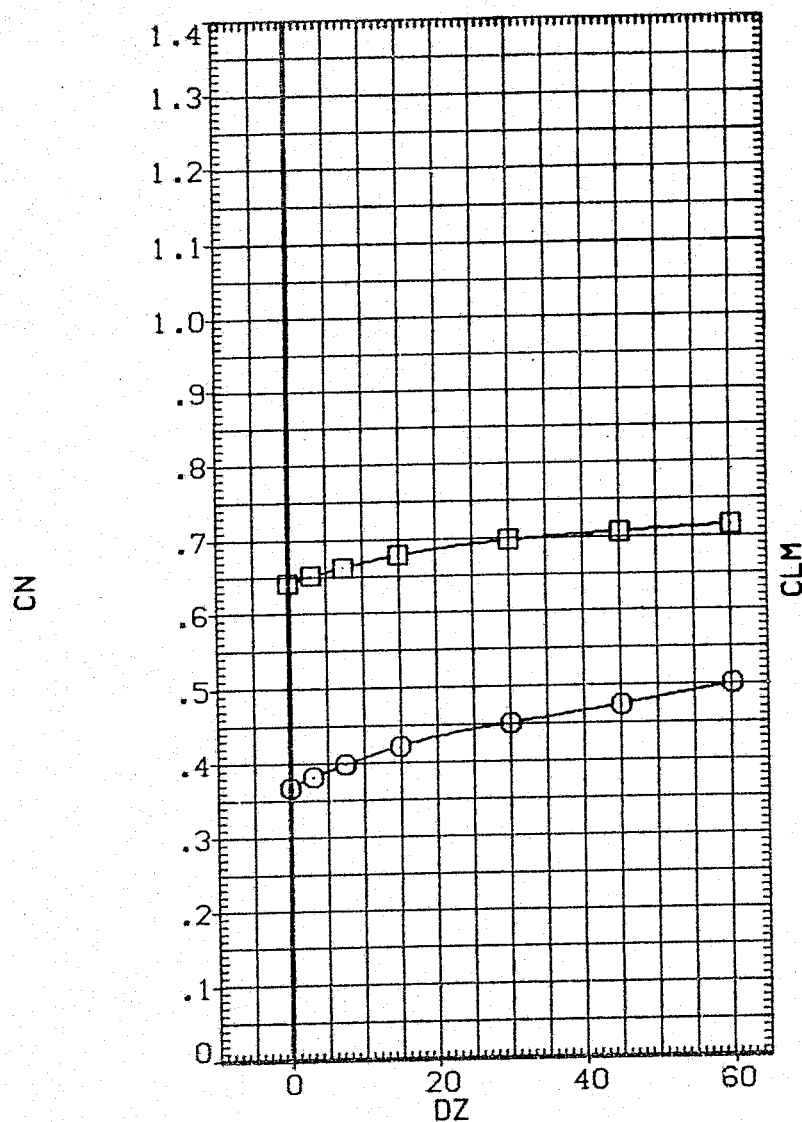


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES	ELV-0B	3.000
○	10.000	ELV-1B	.000	
□	14.000	ELEVON	5.000	MACH .600
		BETA0	.000	BETAC 5.000
		PHI	7.500	DY 10.000
		DX	.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

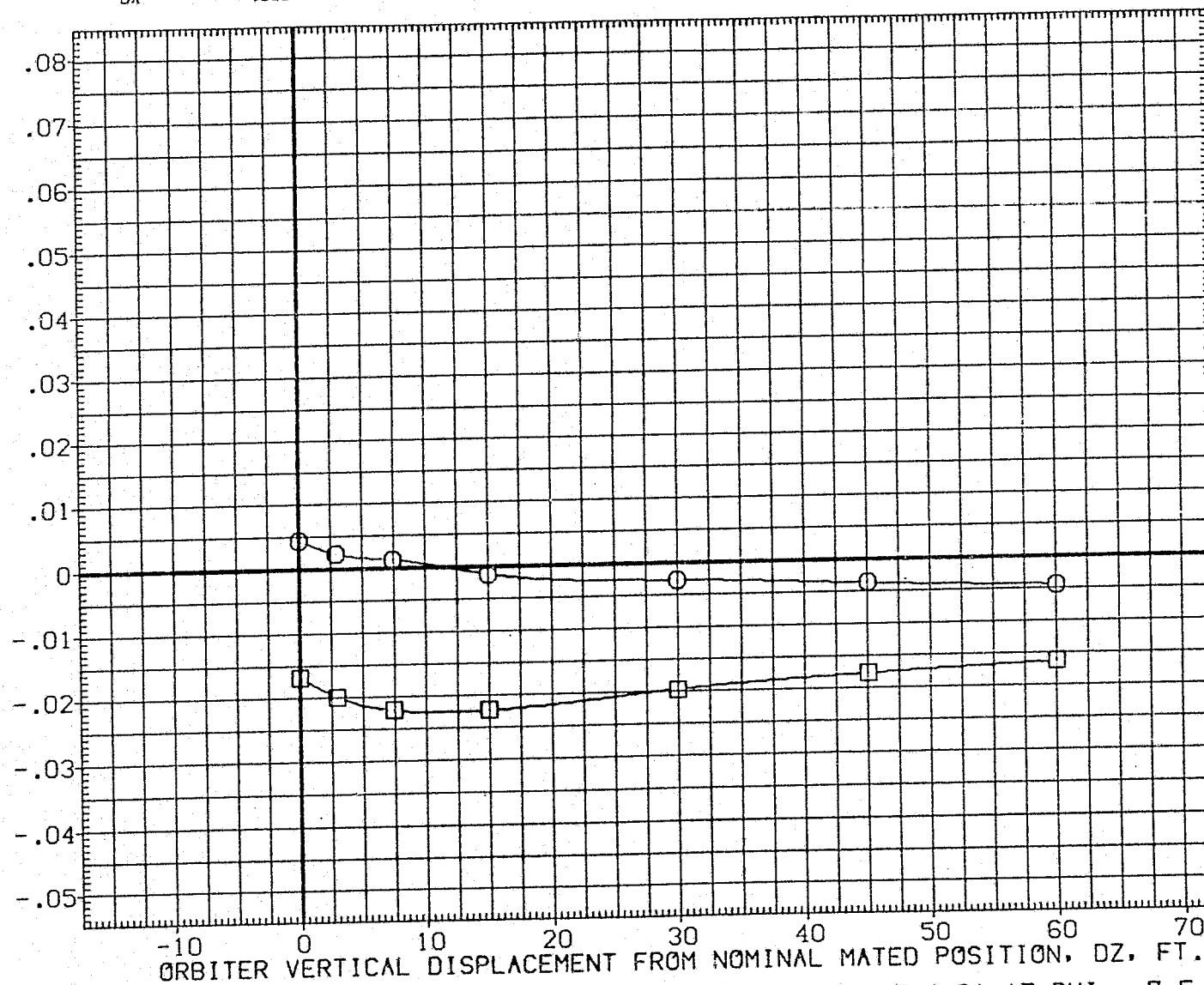


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN092)

SYMBOL	ELEVON	PARAMETRIC VALUES			
		ELV-IB	ELV-OB	ELV-OB	ELV-OB
○	10.000	.000	3.000		
□	14.000	5.000	.600		
		BETAD	BETAC	5.000	
		PHI	DY	10.000	
		DK	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

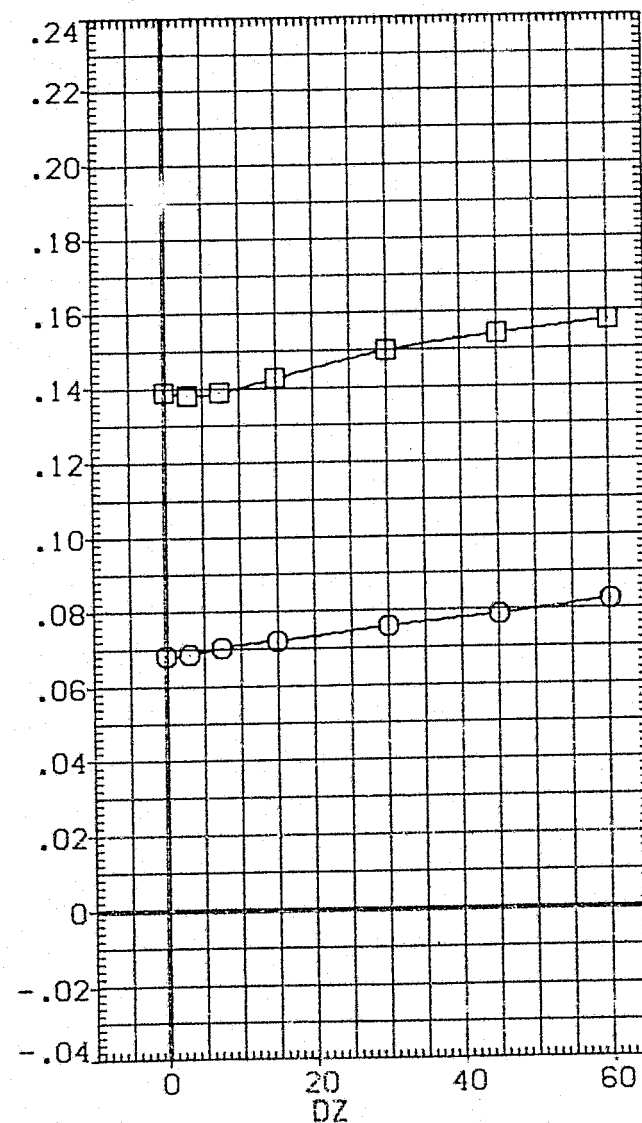
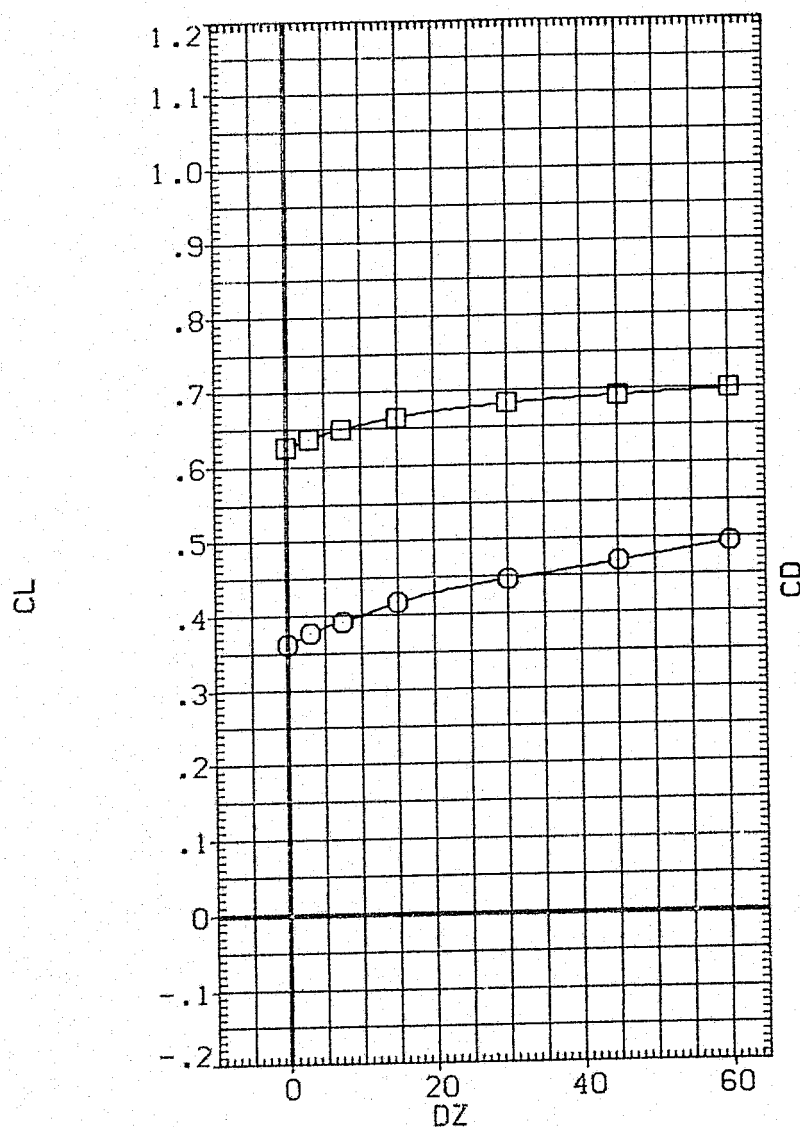


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN092)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB	
○	10.000	ELEVON	.000	MACH	3.000
□	14.000	BETA0	5.000	BETAC	.600
		PHI	.000	DY	5.000
		DX	7.500	ALPHAC	10.000
			.000		4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

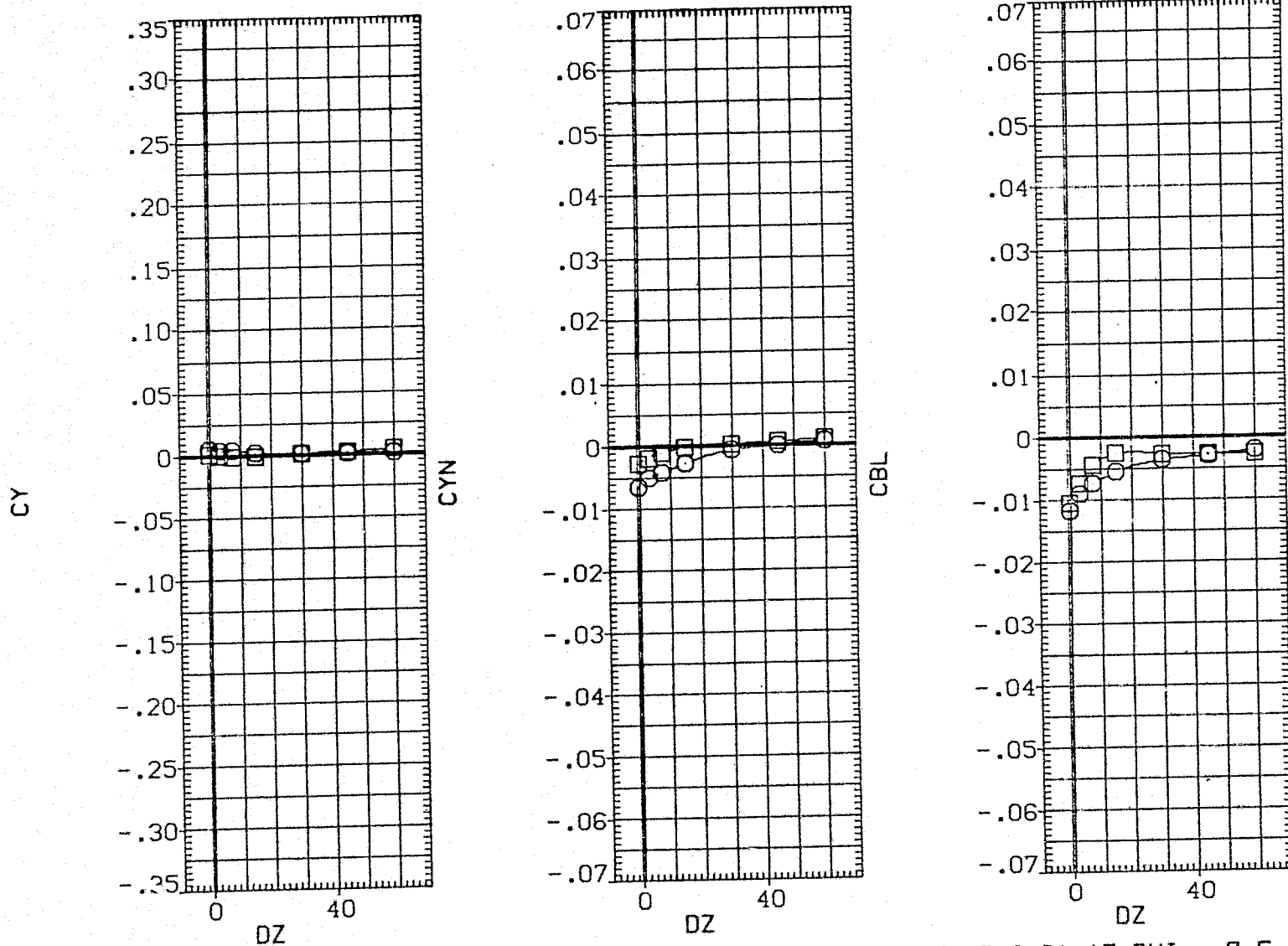


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (092 - 010)(VGN092)

SYMBOL

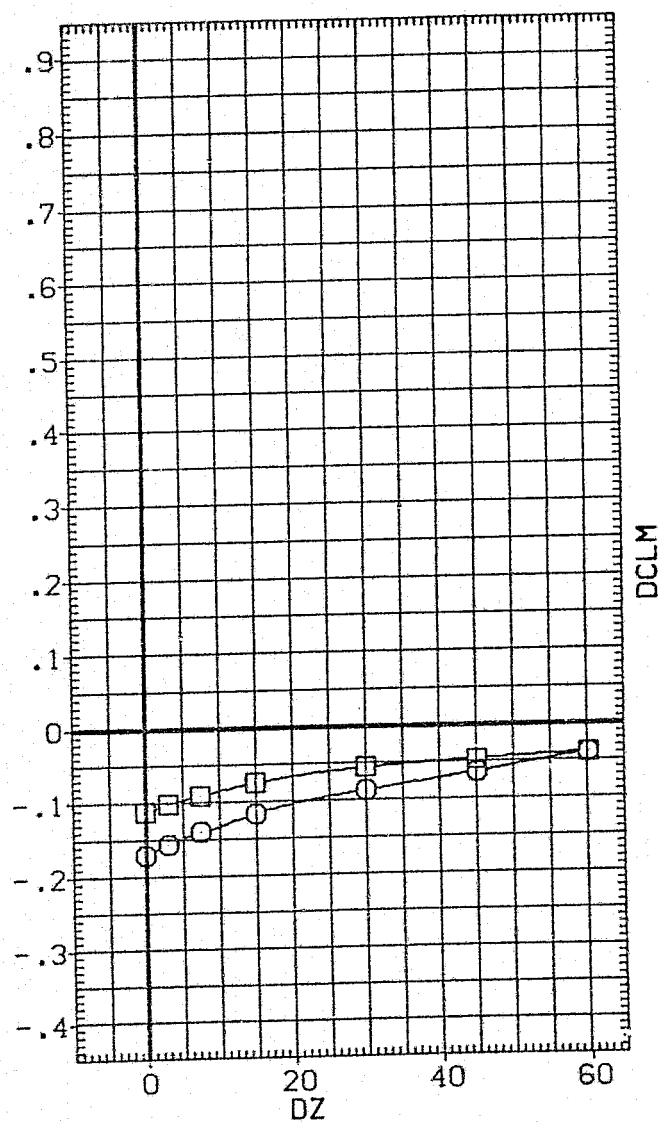
○
□13.000
14.000

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	7.500	DX	.000
DY	10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	938.0000	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

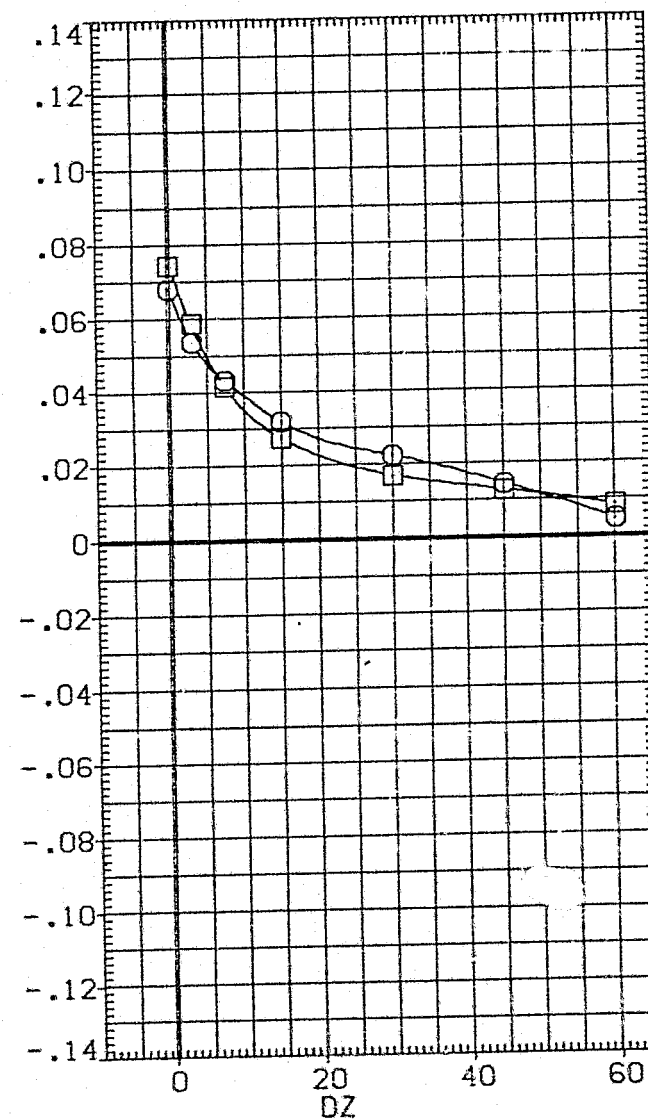


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL
○
□

		PARAMETRIC VALUES	
ALPHA0			5.000
10.000	ALPHAC	4.000	BETAC
14.000	ELV-1B	.000	ELV-0B
	ELEVON	5.000	MACH
	PHI	7.500	DX
	DY	10.000	BETA0
			.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

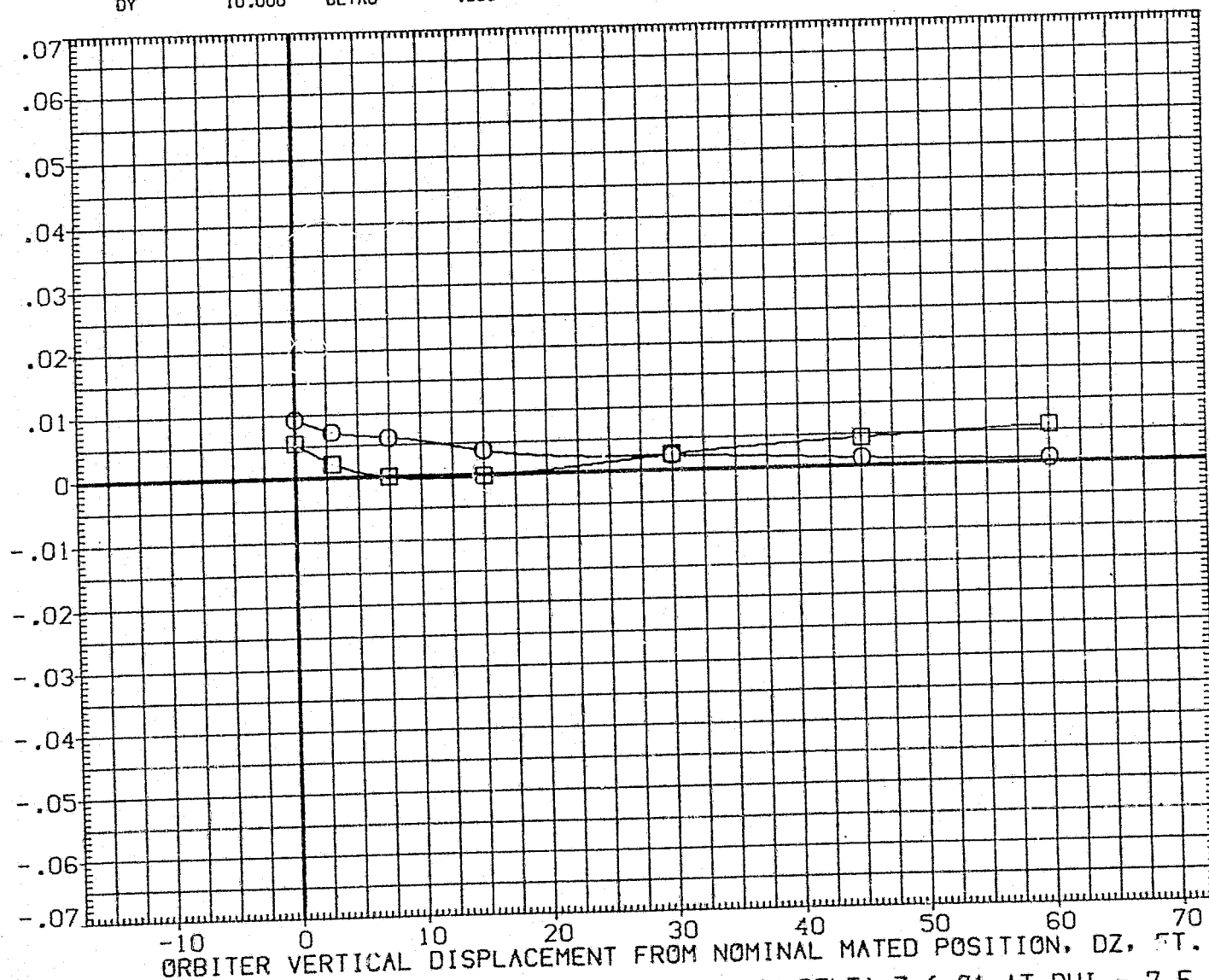


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (092 - 010) (VGN092)

SYMBOL

○
□PHI
0.000
10.000

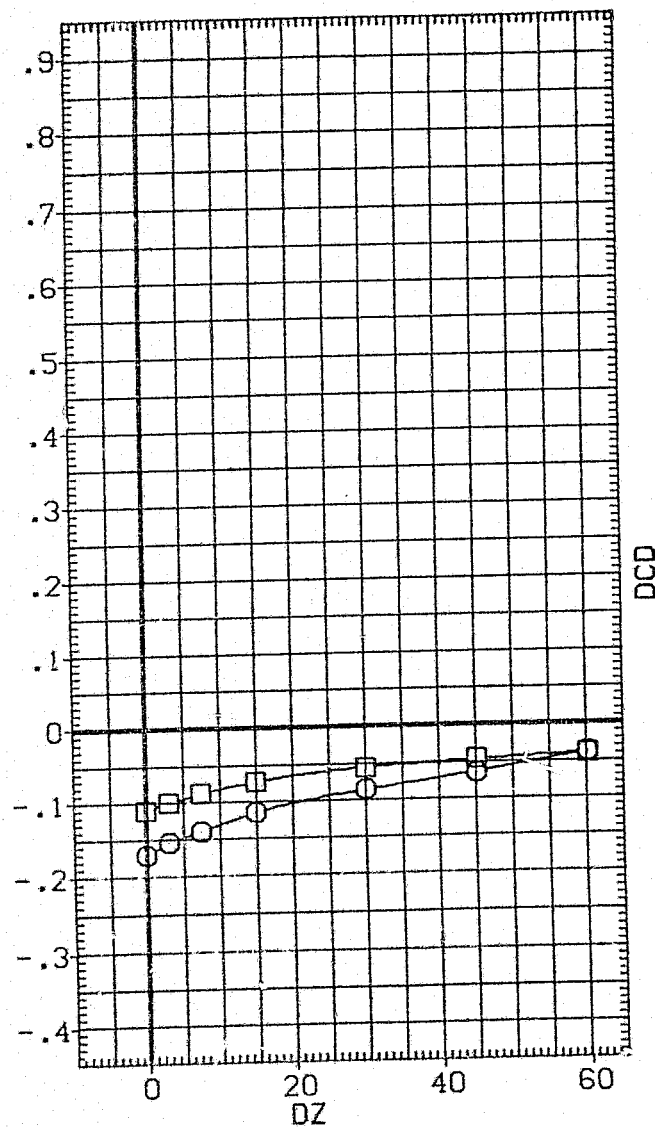
PARAMETRIC VALUES

ALPHAC	4.000	BETAC	5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	7.500	DX	.000
DY	10.000	BETAG	.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6900	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL



DCD

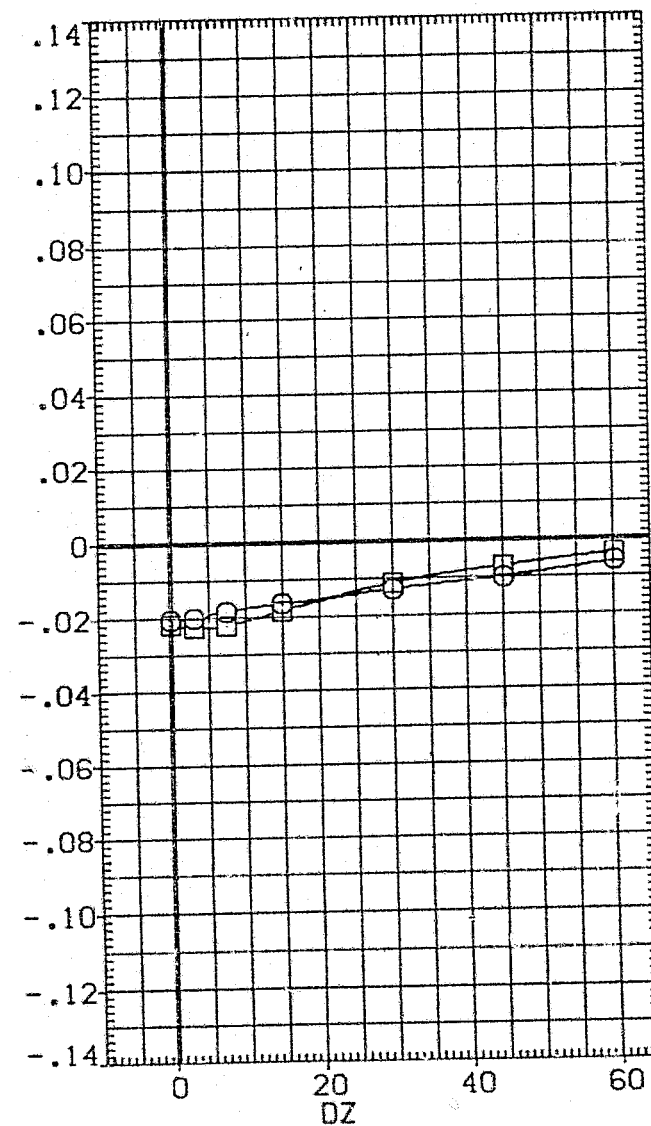


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN094)

SYMBOL	ALPHA0	PARAMETRIC VALUES	ELV-IB	ELV-OB
○	10.000	ELEVON	.000	3.000
□	14.000	BETA0	5.000	.600
		PHI	.000	5.000
		DX	7.500	10.000
		DY	.000	8.000
		ALPHAC		

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

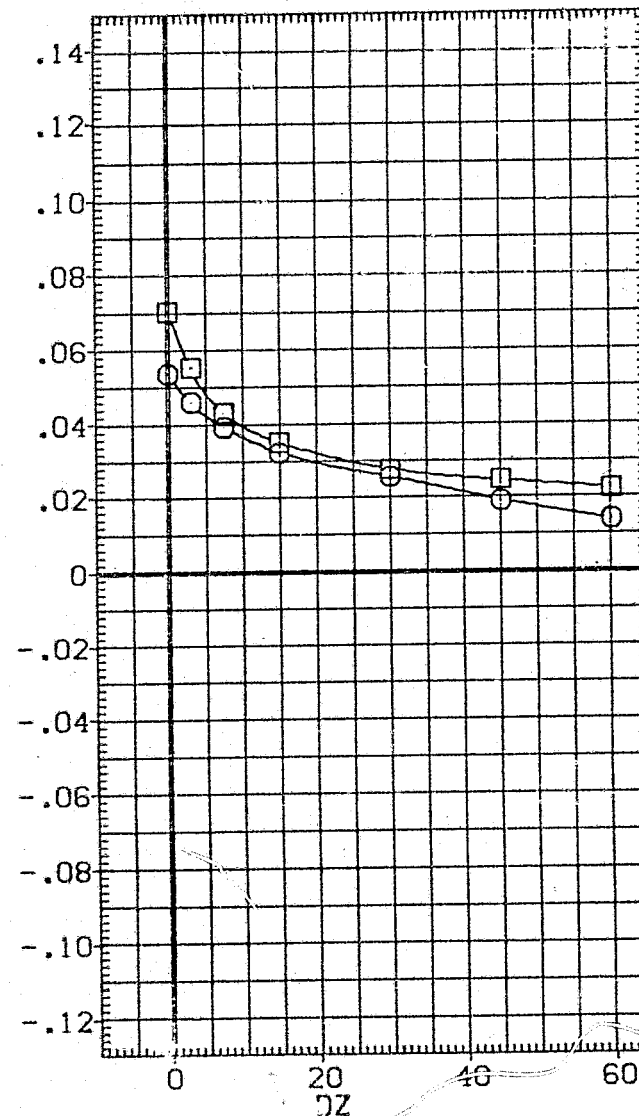
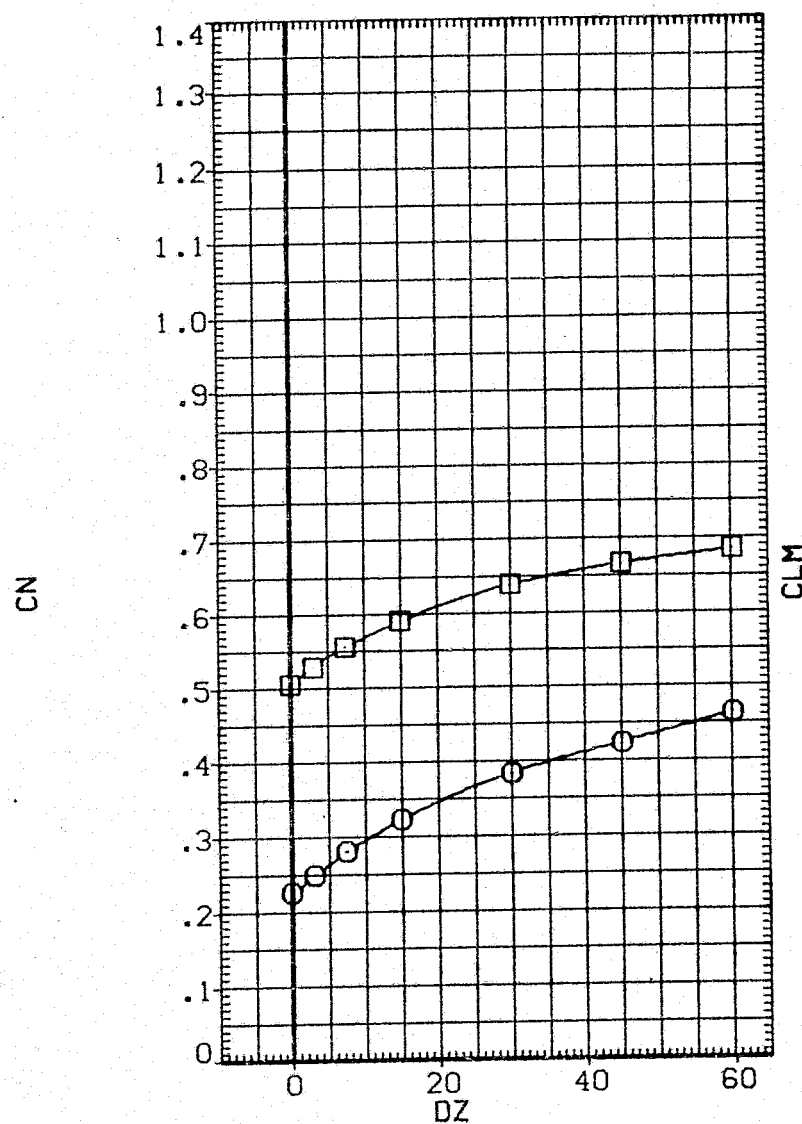


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 IN. PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN094)

SYMBOL

○
□

PARAMETER

10.000

14.000

ELV-1B

ELEVON

BETA0

PHI

DX

PARAMETRIC VALUES

.000

5.000

.000

7.500

.000

ELV-0B

MACH

BETAC

DY

ALPHAC

3.000

.600

5.000

10.000

8.000

REFERENCE INFORMATION

SREF

2690.0000

50.FT.

LREF

274.8100

IN.

BREF

936.0800

IN.

XMRP

1104.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

AXIAL FORCE COEFFICIENT, CA

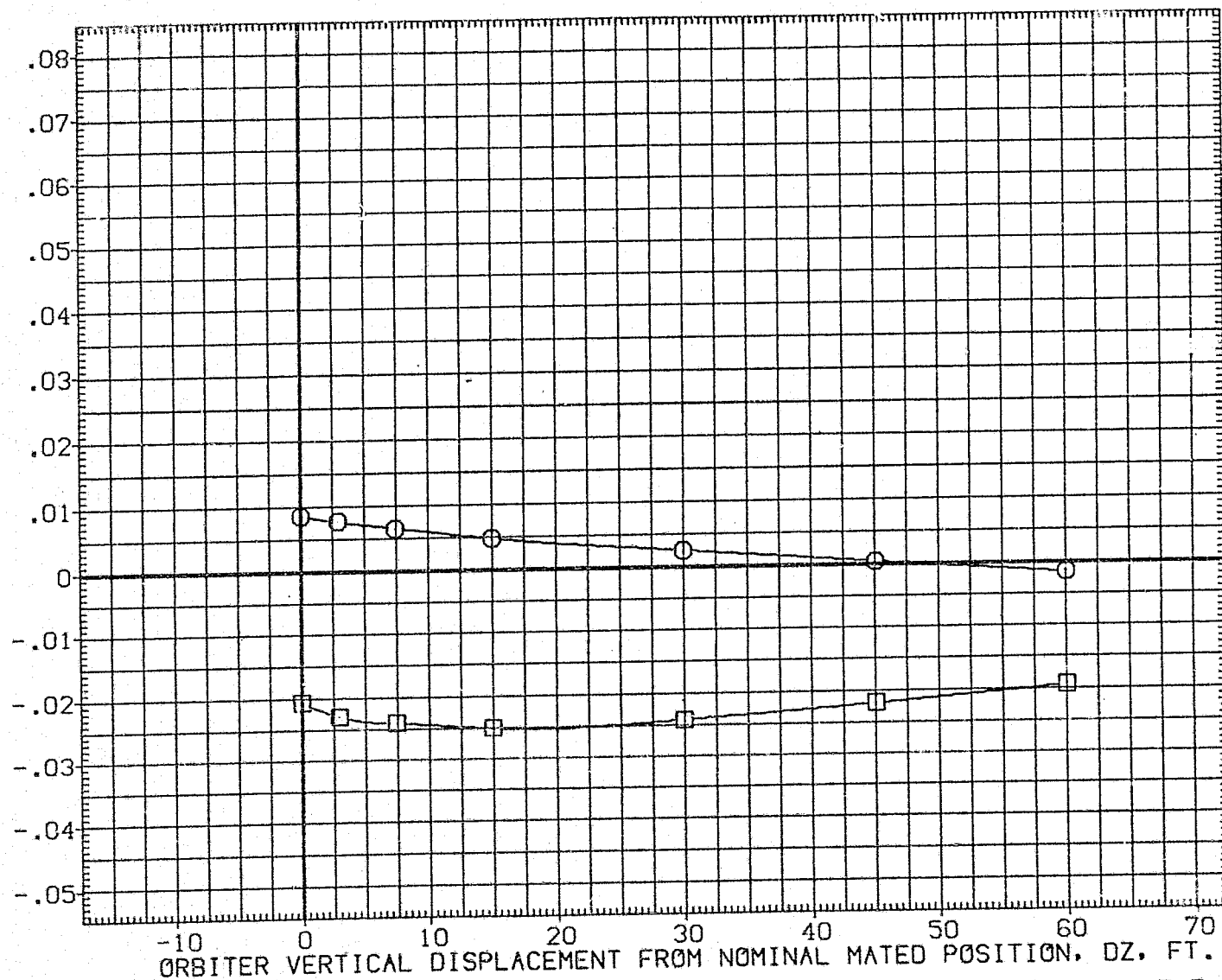


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 3.000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC 5.000
		PHI 7.500 DY 10.000
		DX .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

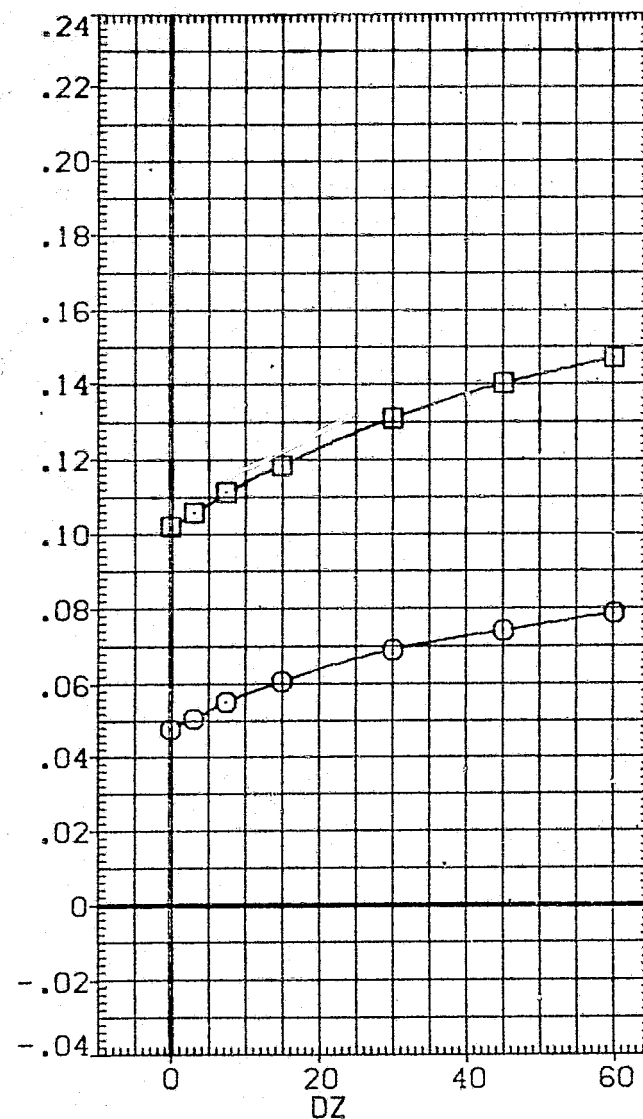
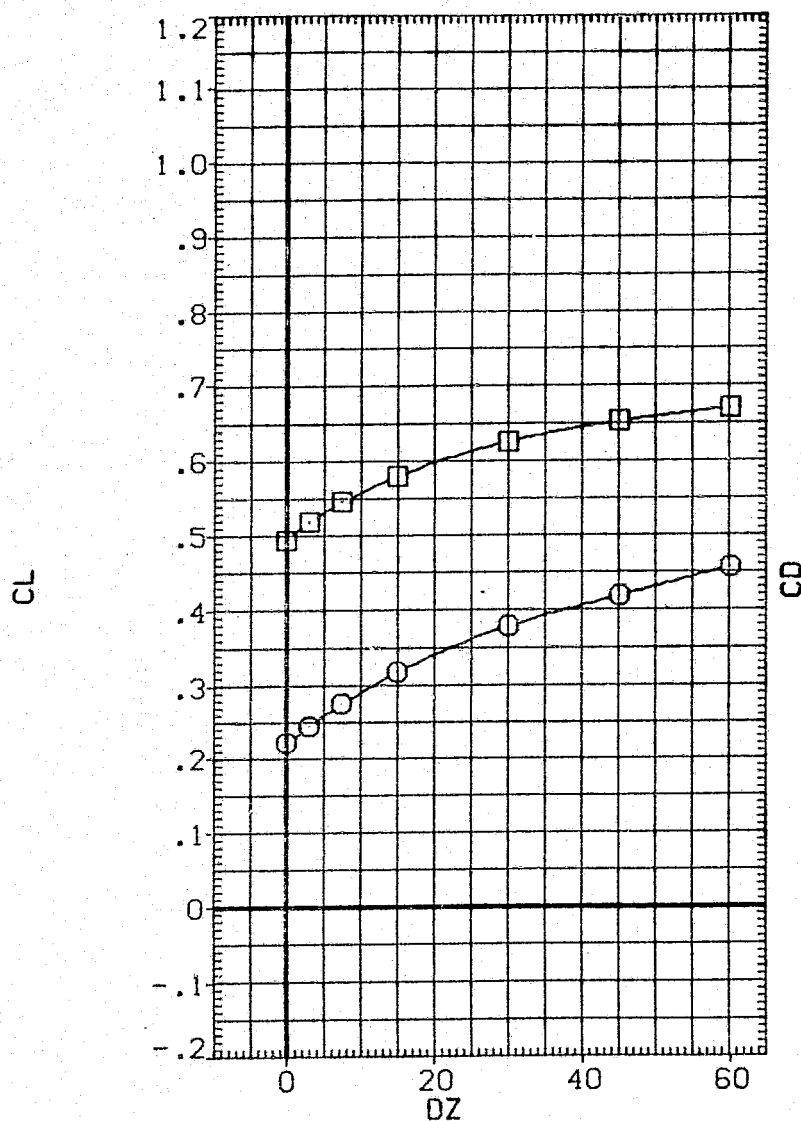


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN094)

SYMBOL	AS	AO	PARAMETRIC VALUES	
○	0.00	ELV-IB	.000	ELV-OB 3.000
□	14.000	ELEVON	5.000	MACH .600
		BETA0	.000	BETAC 5.000
		PHI	7.500	DY 10.000
		DX	.000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

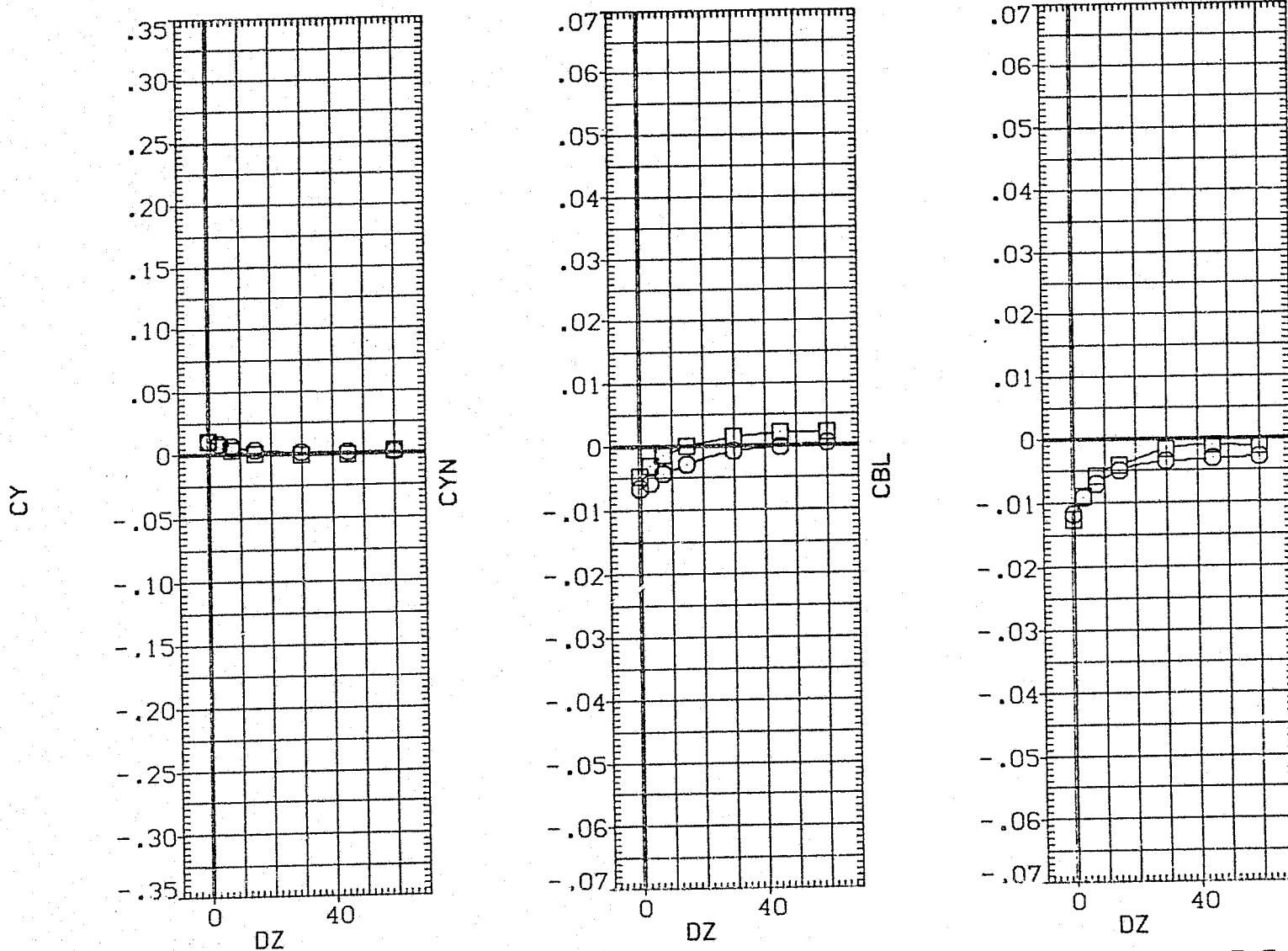


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	5.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	7.500	OX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.8800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

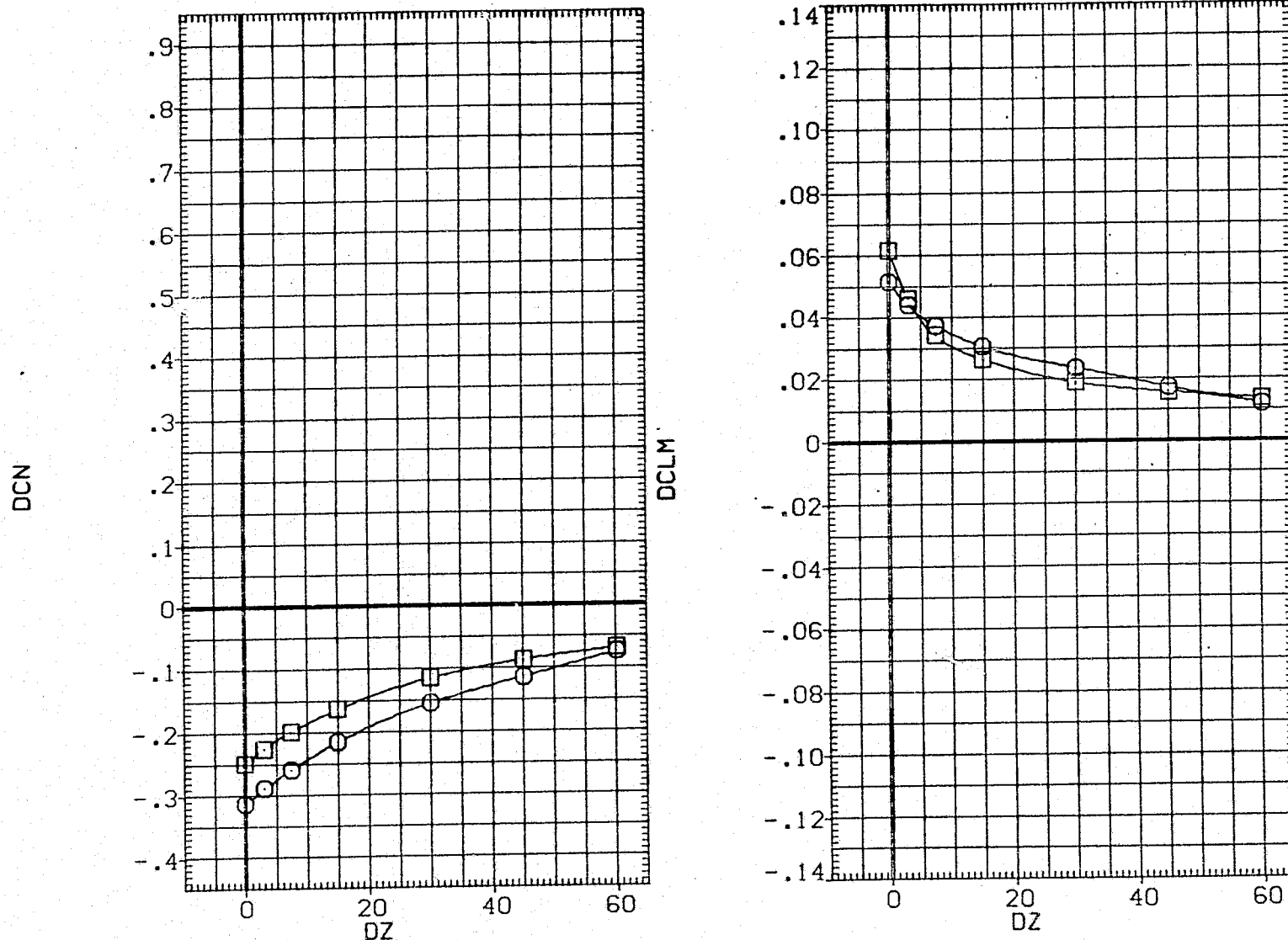


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1) D/S (094 - 010)(VGN094)

SYMBOL	PARAMETRIC VALUES
○	ALPHAC 8.000 BETAC 5.000
□	ELV-IB .000 ELV-OB 3.000
	ELEVON 5.000 MACH .600
	PHI 7.500 DX .000
	DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

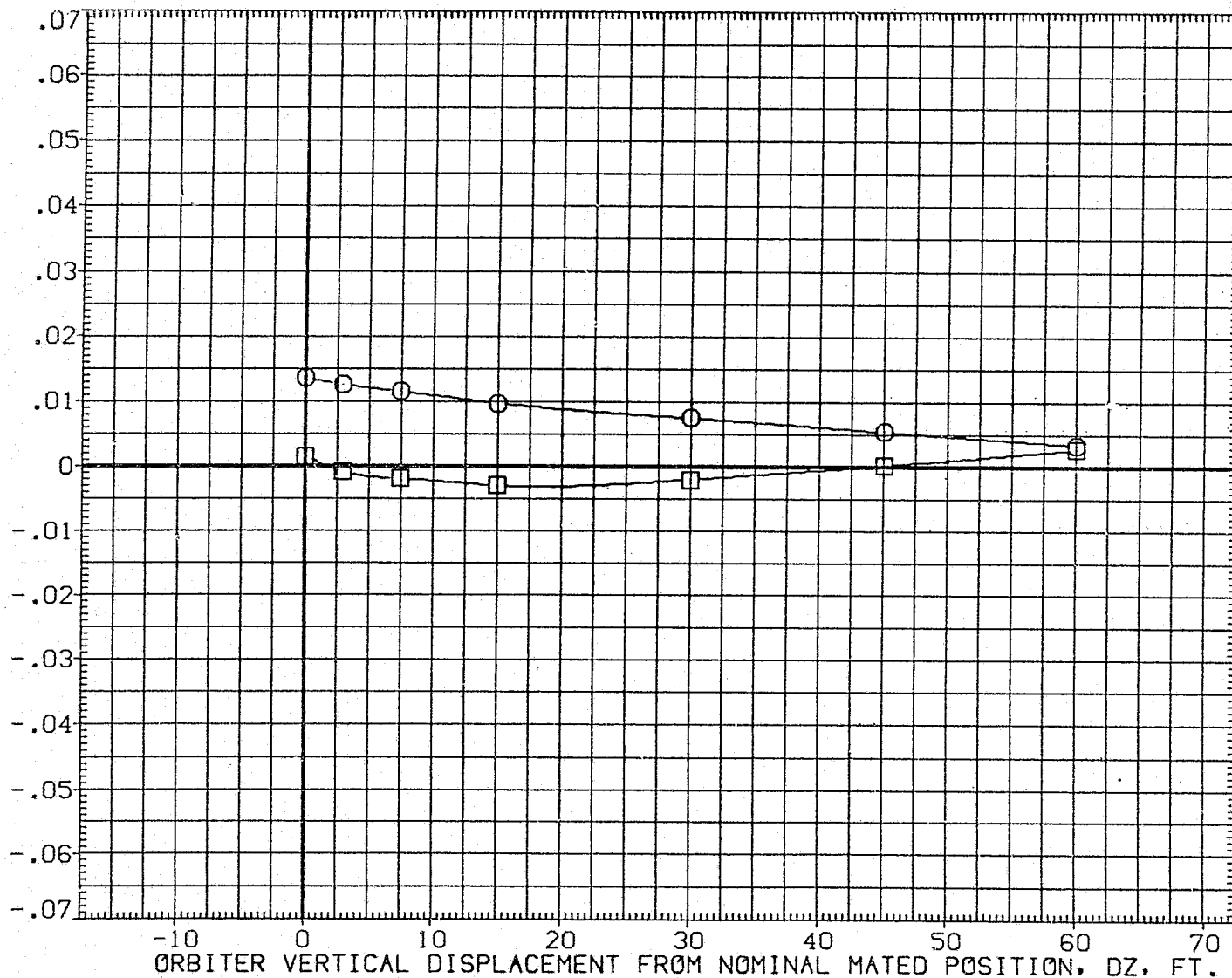


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL



ALPHA0
10.000
14.000

ALPHAC
ELV-1B
ELEVON
PHI
DY

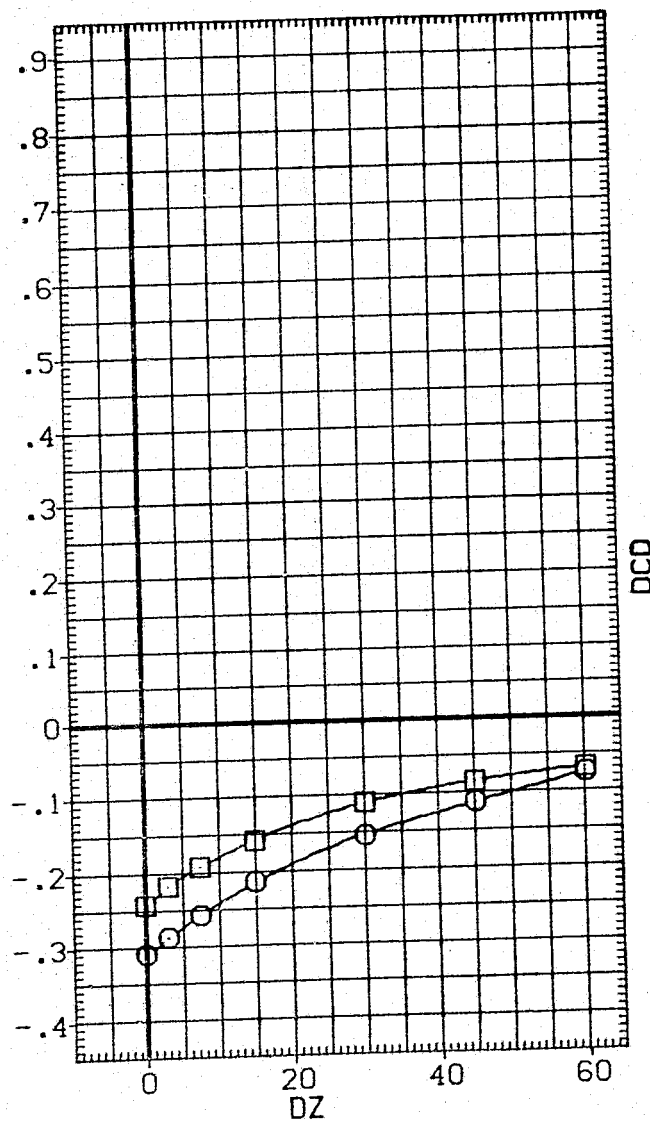
PARAMETRIC VALUES

8.000 BETAC 5.000
.000 ELV-OB 3.000
5.000 MACH .600
7.500 DX .000
10.000 BETA0 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

DCL



DCD

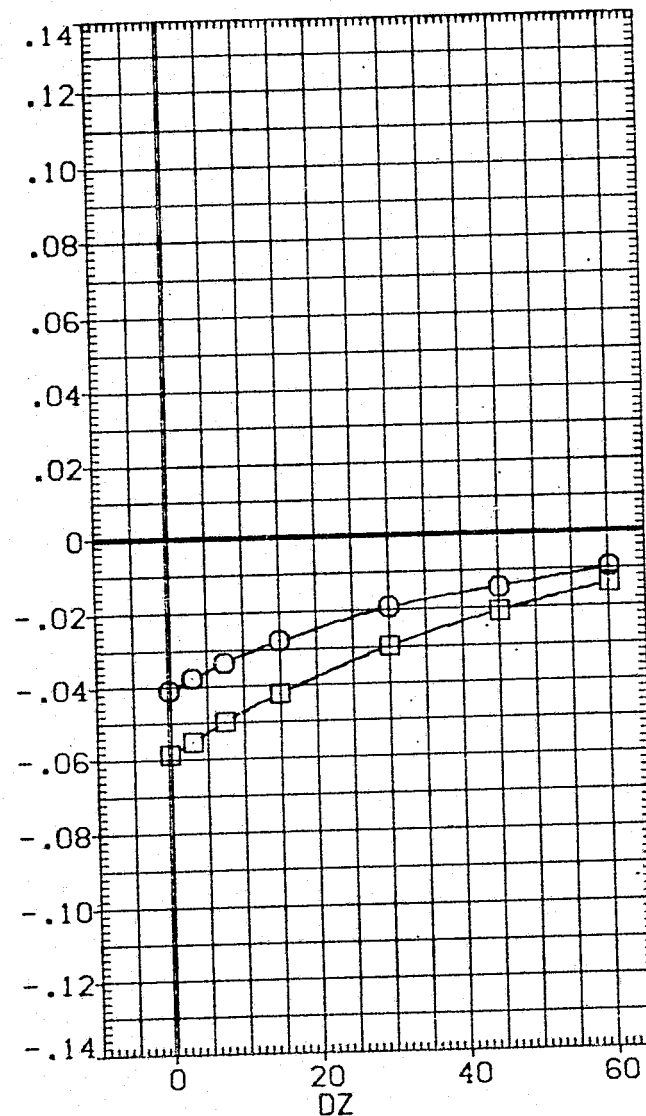


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN093)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	0.000	ELV-1B .000 ELV-0B 3.000
□	11.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC 5.000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

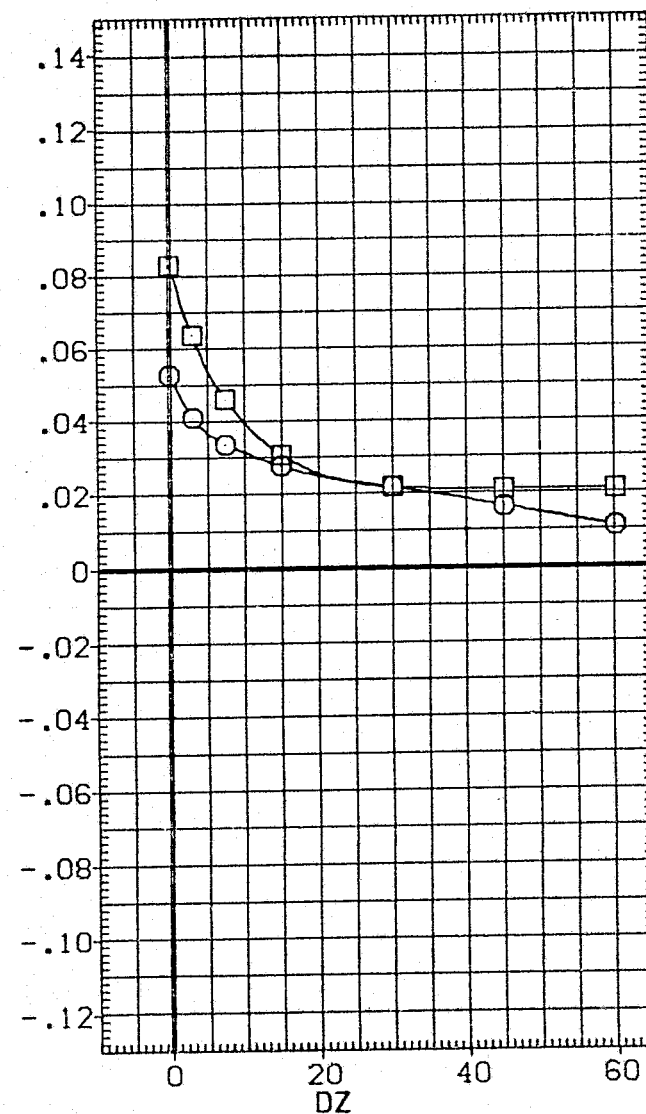
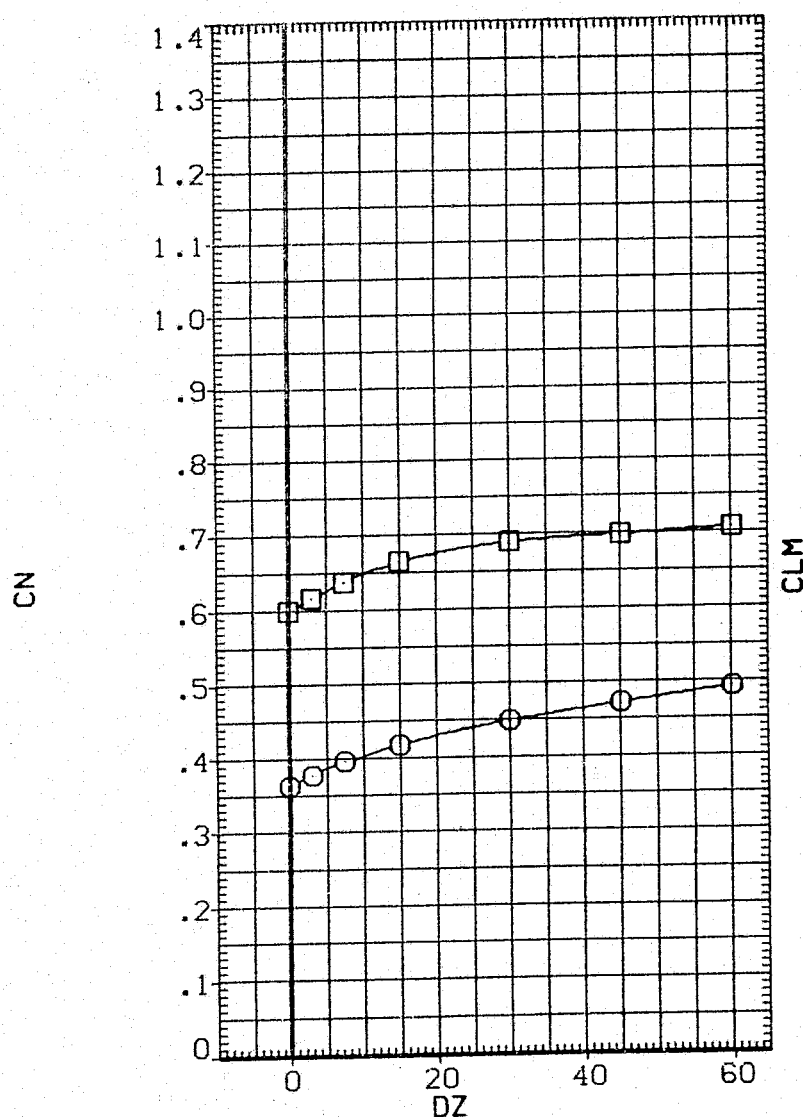


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN093)

SYMBOL
○
□ALPHA0
10.000
14.000ELV-18
ELEVON
BETA0
PHI
DX

PARAMETRIC VALUES

.000	ELV-08	3.000
5.000	MACH	.600
.000	BETAC	5.000
7.500	DY	10.000
10.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

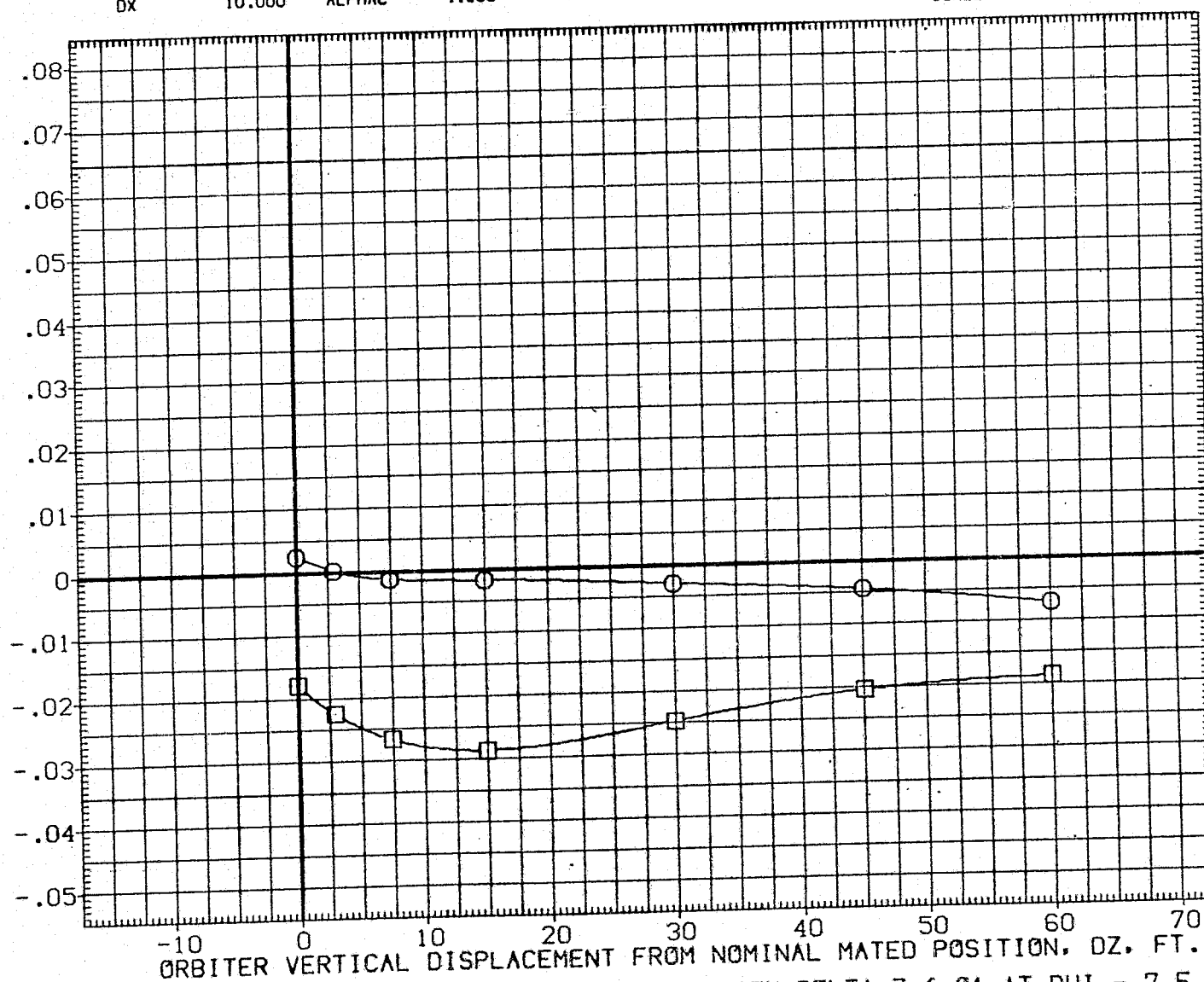


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN093)

SYMBOL	UNIT	PARAMETRIC VALUES
○	1.000	ELV-1B .000 ELV-0B 3.000
□	11.000	ELEVON 5.000 MACH .600
		BETA0 .000 BETAC 5.000
		PHI 7.500 DY 10.000
		DX 10.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XM RP	1109.0000	IN.X0
YM RP	.0000	IN.Y0
ZM RP	375.0000	IN.Z0
SCALE	.0300	

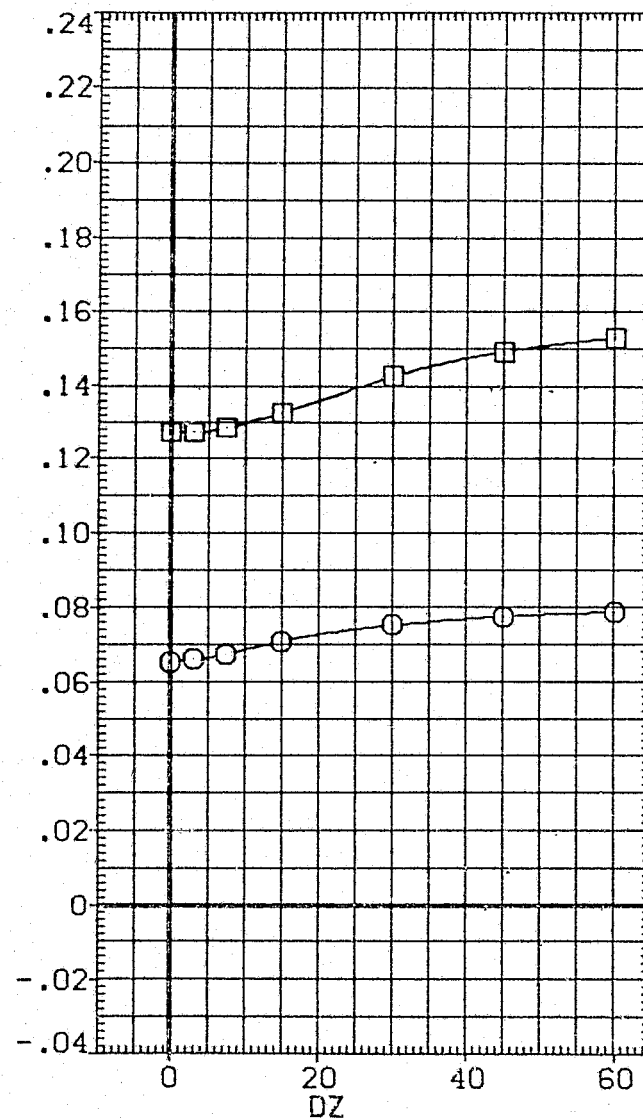
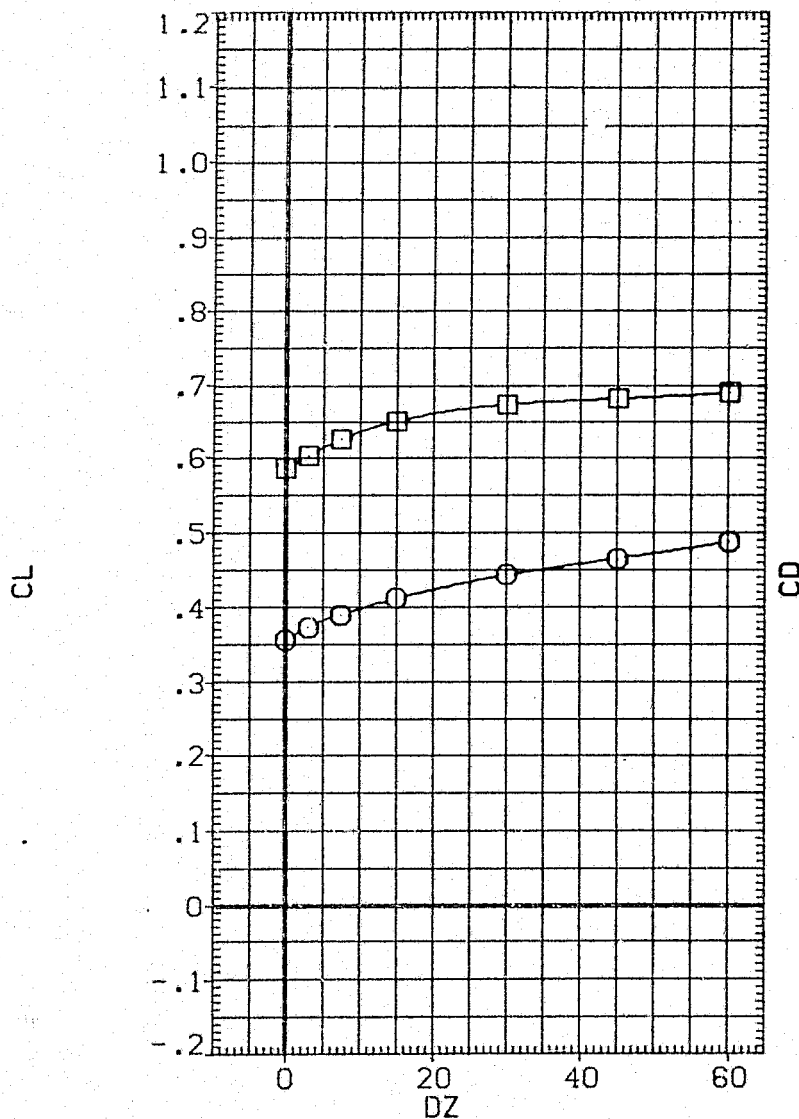


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-1B .003	ELV-0B 3.000
□	14.000	ELEVON 5.000	MACH .600
		BETA0 .000	BETAC 5.000
		PHI 7.500	DY 10.000
		DX 10.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

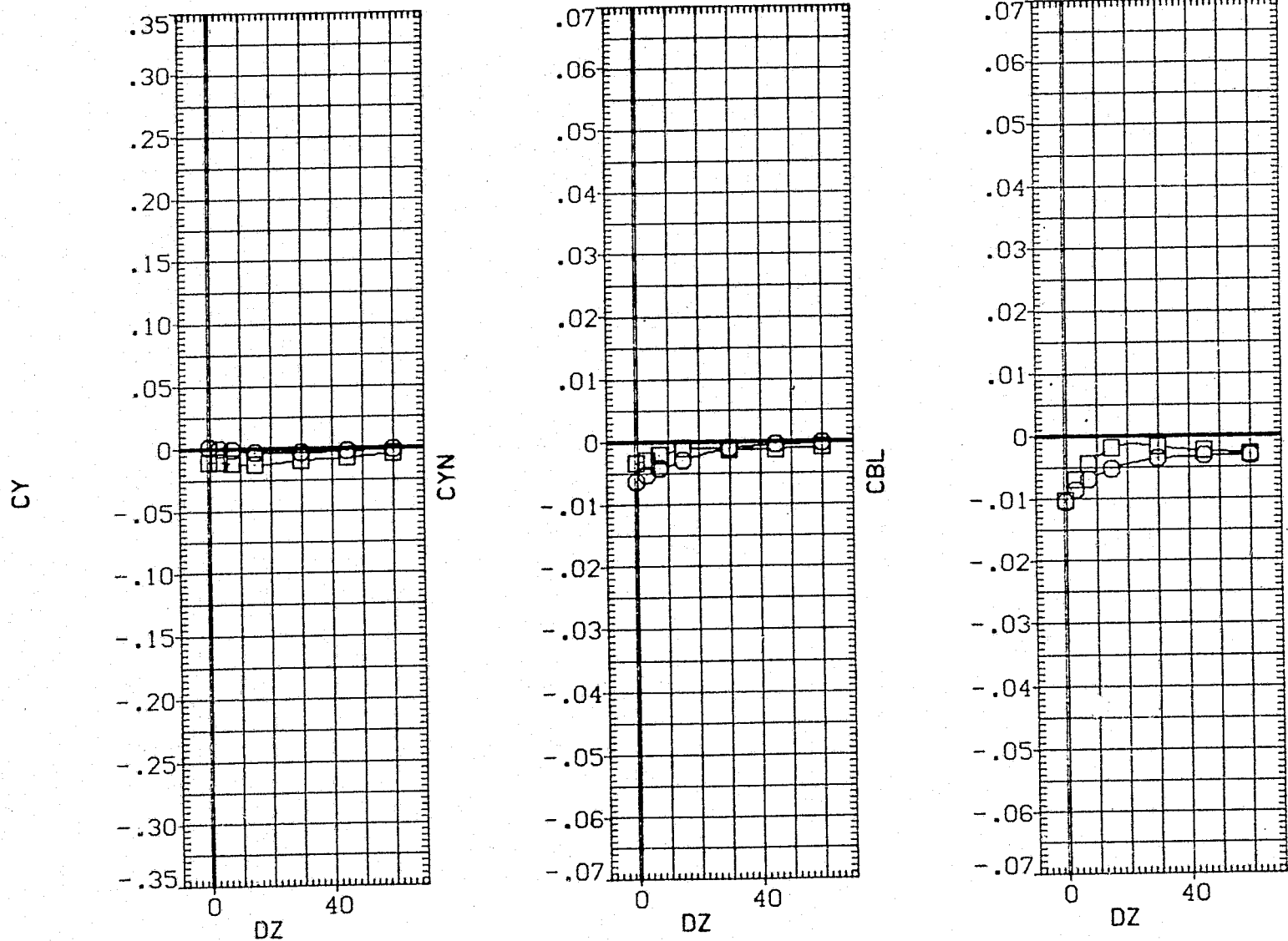


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (093 - 010) (VGN093)

SYMBOL	ALPHA	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC 5.000
□	14.000	ELV-IB .000 ELV-OB 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

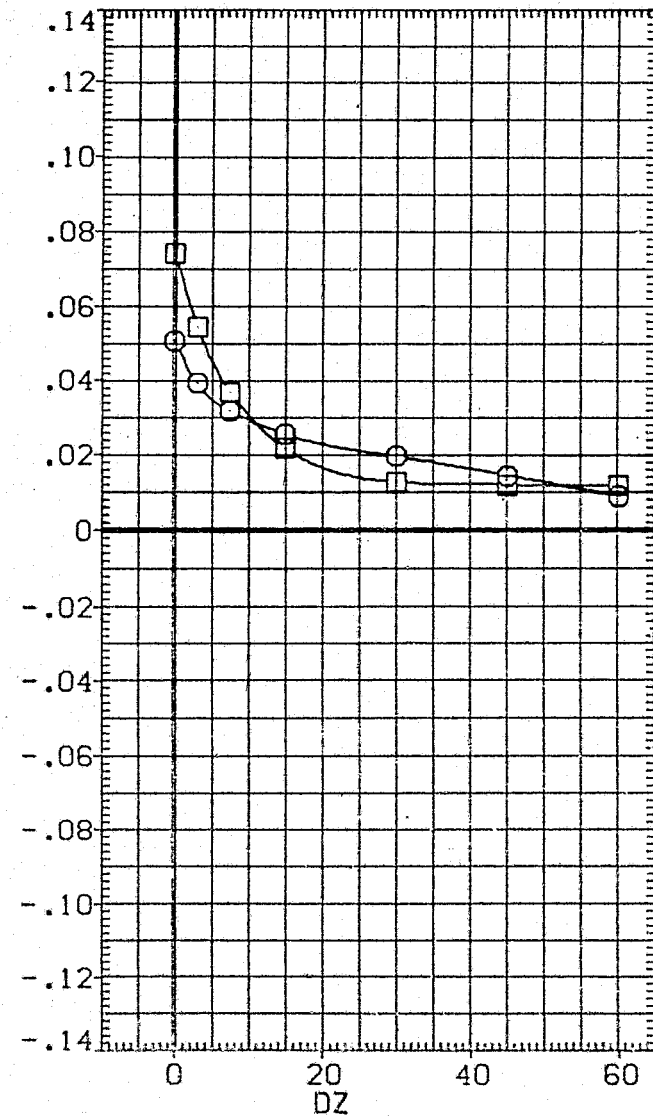
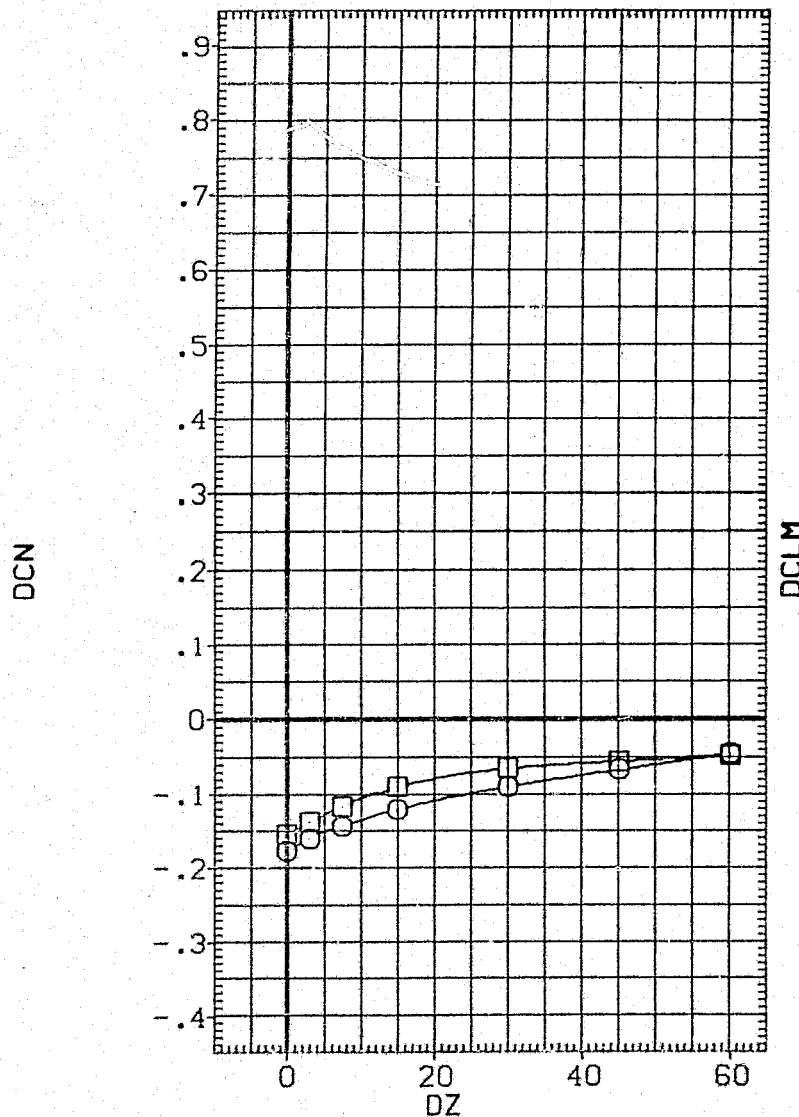


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL
○
□ALPHA0
10.000
14.000ALPHAC
ELV-IB
ELEVON
PHI
DYPARAMETRIC VALUES
4.000
.000
5.000
7.500
10.000
BETAC
ELV-OB
MACH
DX
BETA05.000
3.000
.500
10.000
.000

REFERENCE INFORMATION

SREF	2690.0000	50. FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. NO
YMRP	.0000	IN. YO
ZMRP	375.0000	IN. ZC
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

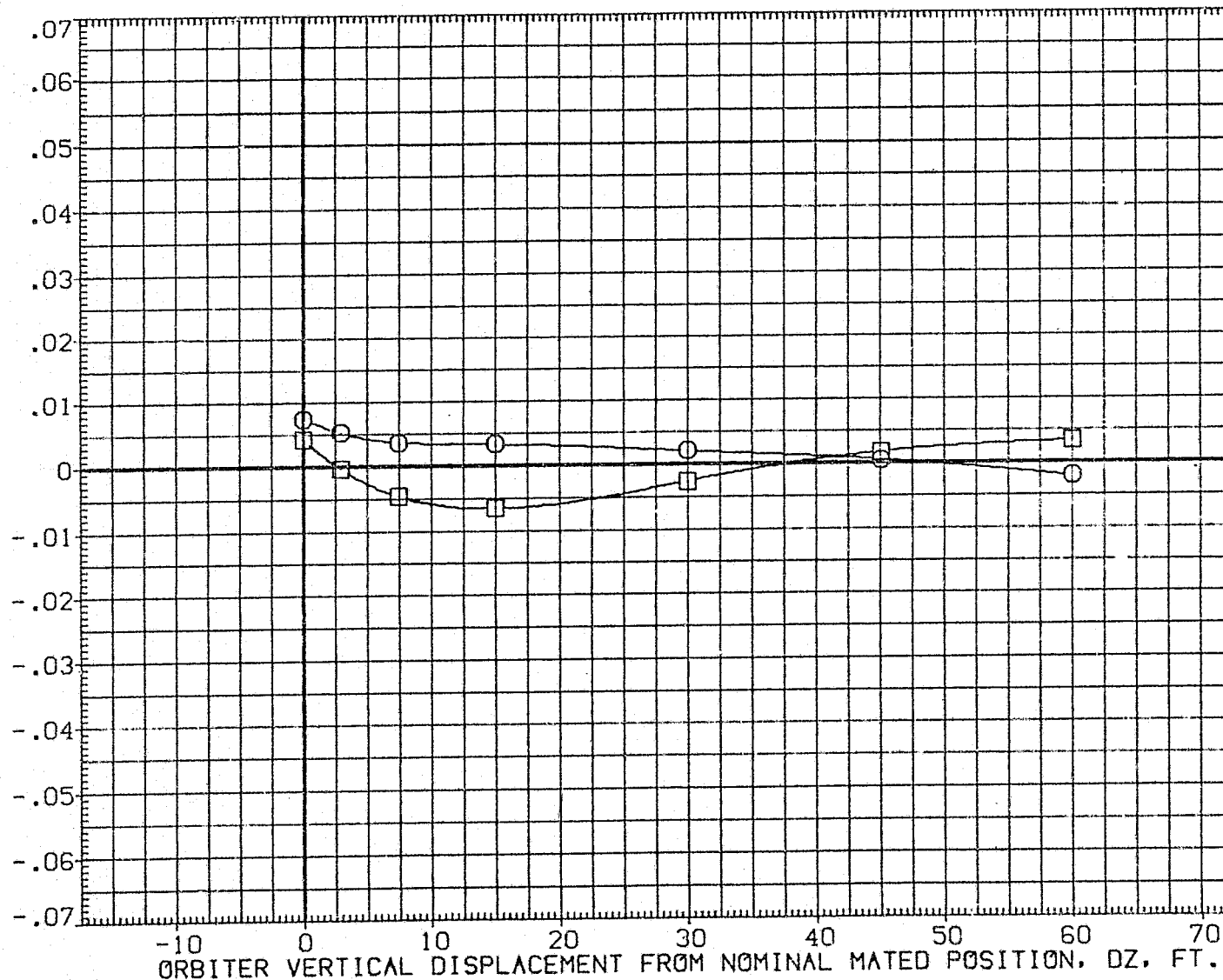


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (093 - 010) (VGN093)

SYMBOL:

○
□

ALPHA0

2.000

10.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

5.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

7.500

DX

10.000

DY

10.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

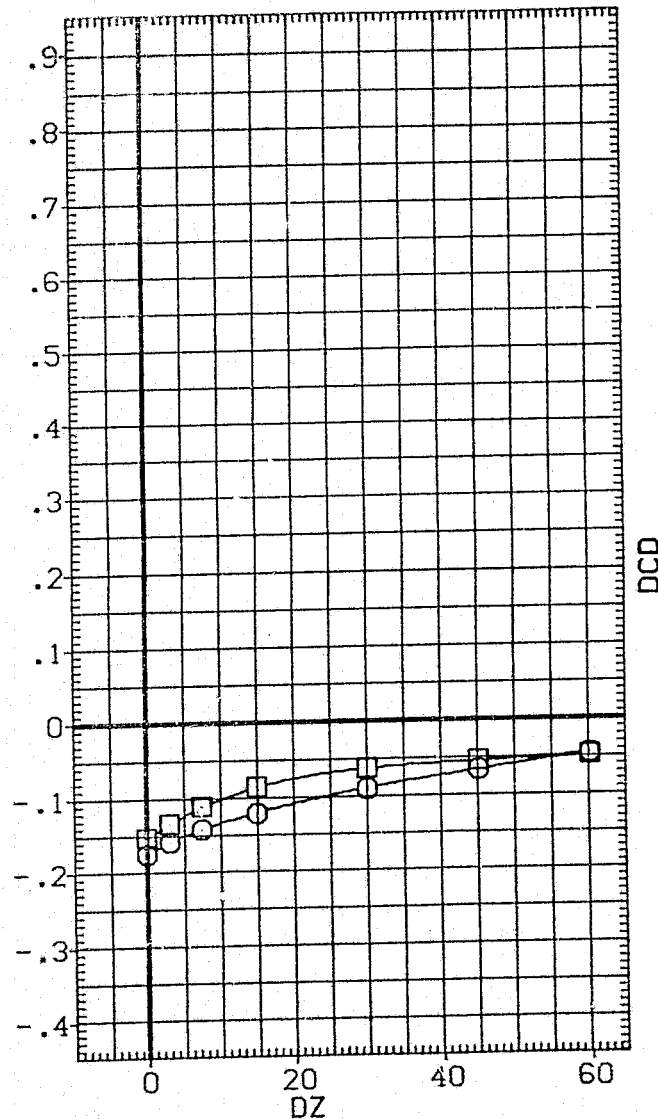
IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

DCL



DCD

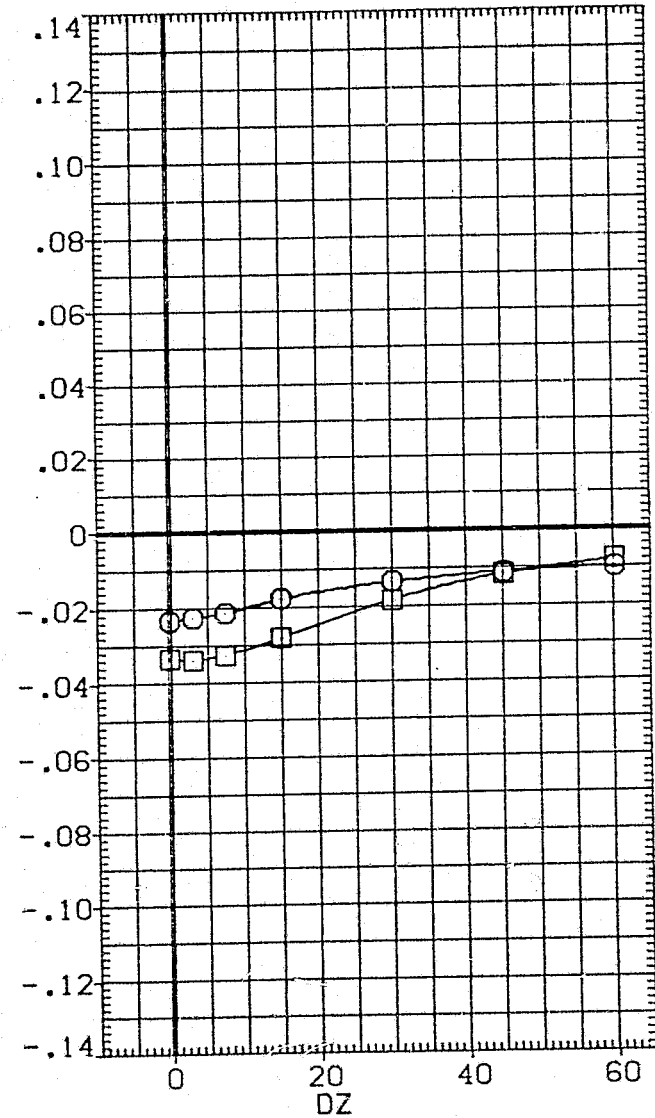


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	3.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	.000	BETAC	5.000
		PHI	7.500	DY	10.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

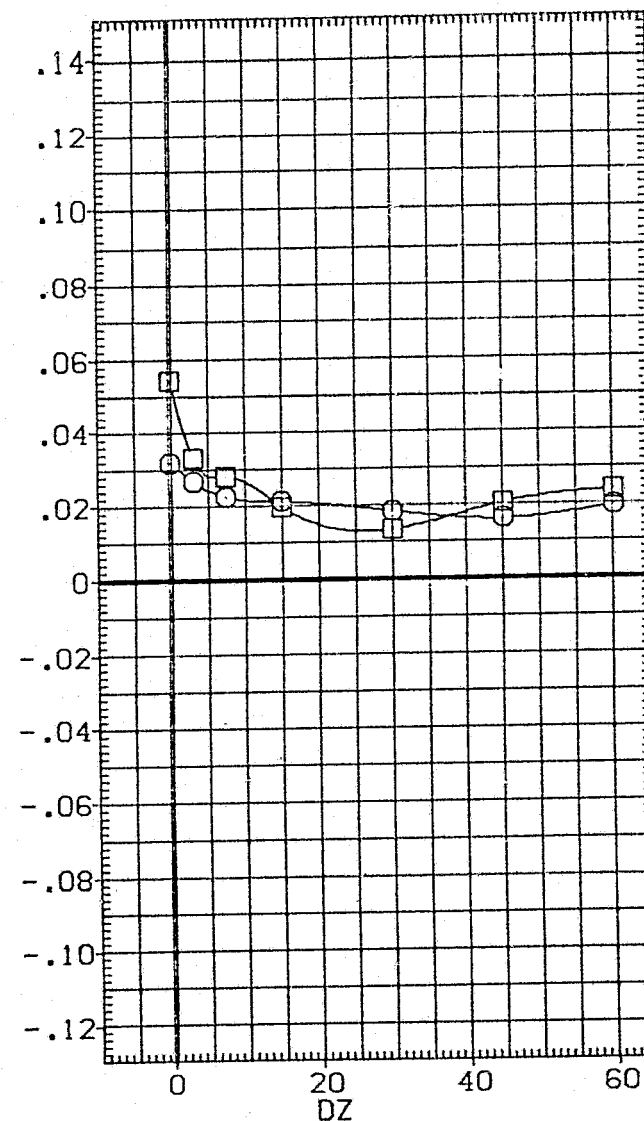
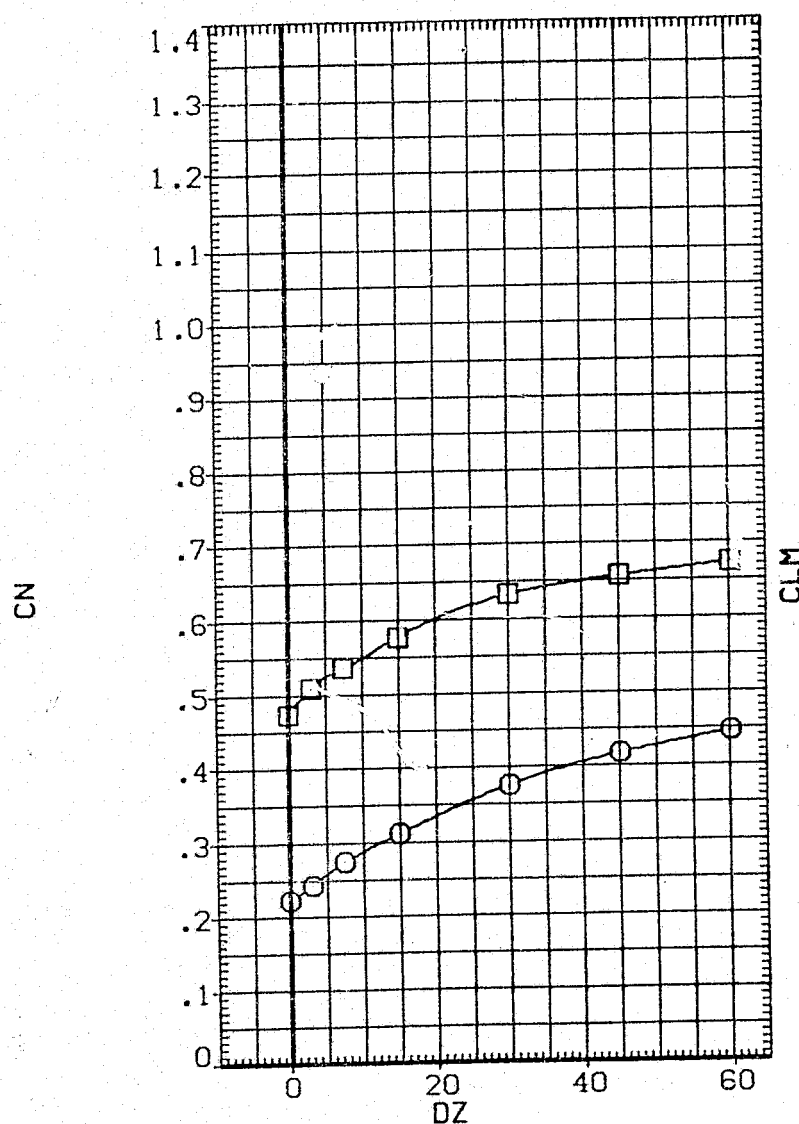


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN095)

SYMBOL

□

PARAMETRIC VALUES

ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
BETA0	.000	BETAC	5.000
PHI	7.500	DY	10.000
DK	10.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	SO, FT.
LREF	474.8100	IN.
BREF	936.6300	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

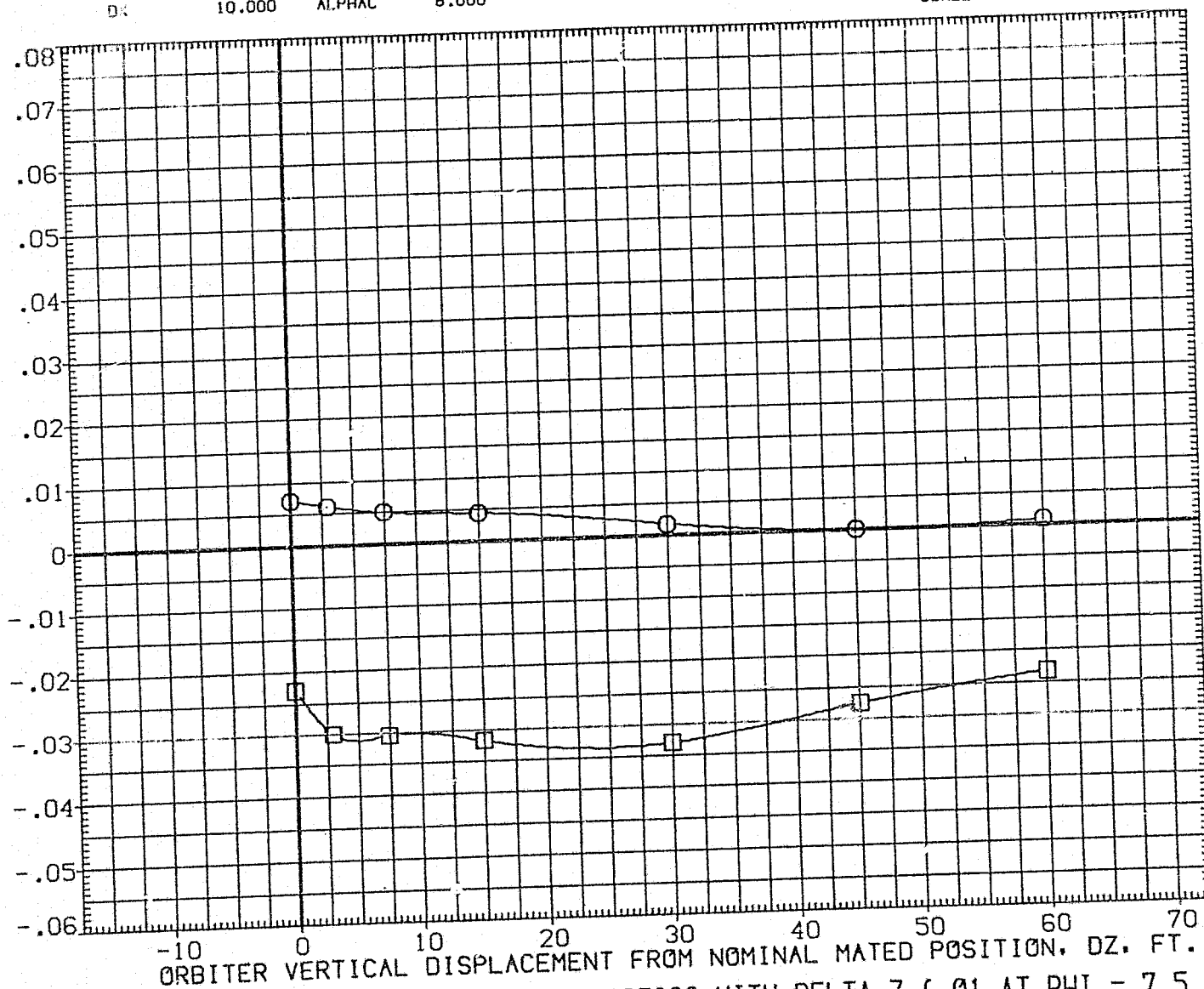


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA(NGN095)

SYMBOL	ALPHA0	PARAMETRIC VALUES	ELV-OB	3.000
○	10.000	ELV-1B	.000	
□	14.000	ELEVON	5.000	
		BETA0	.000	
		PHI	7.500	
		DX	10.000	
			BETAC	5.000
			DY	10.000
			ALPHAC	6.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

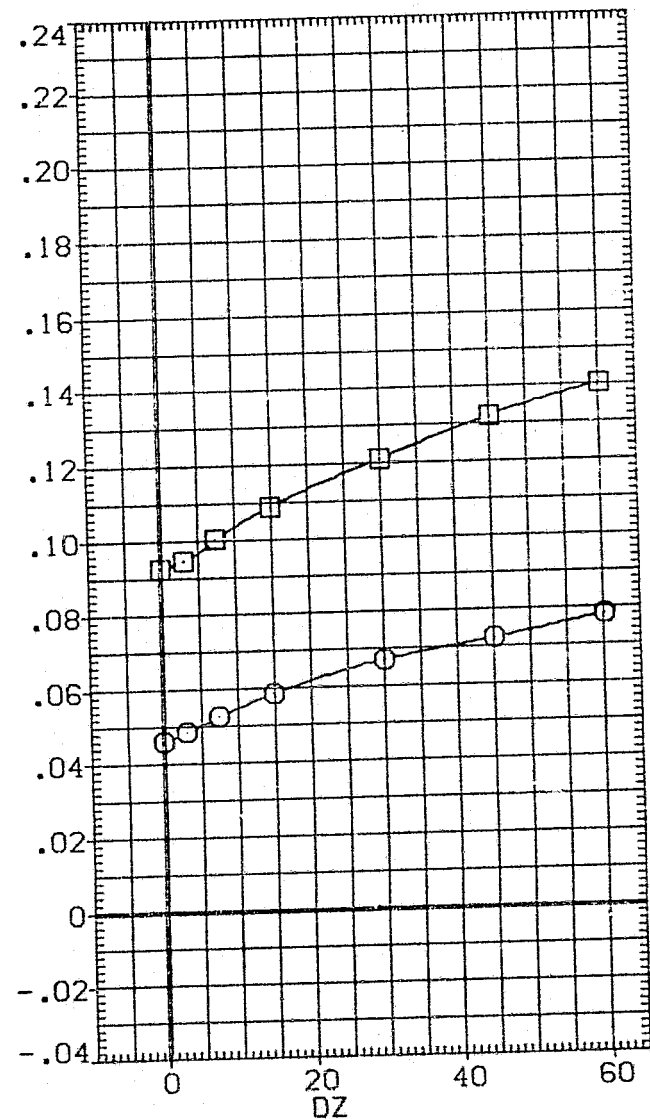
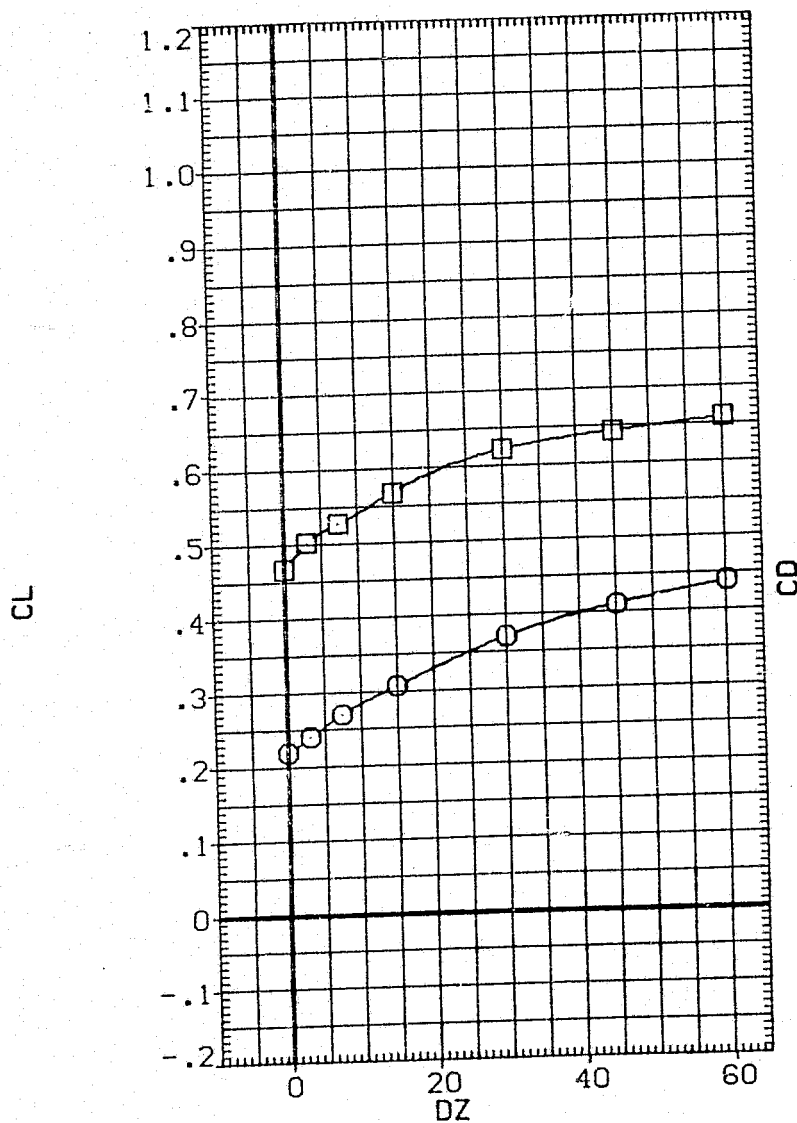


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 01 S1

ORBITER DATA (NGN095)

SYMBOL	PARAMETER	PARAMETRIC VALUES
○	ELV-1B	.000
□	ELEVON	5.000
	BETA0	.000
	PHI	7.500
	DX	10.000
	ELV-0B	3.000
	MACH	.600
	BETAC	5.000
	DY	10.000
	ALPHAC	8.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

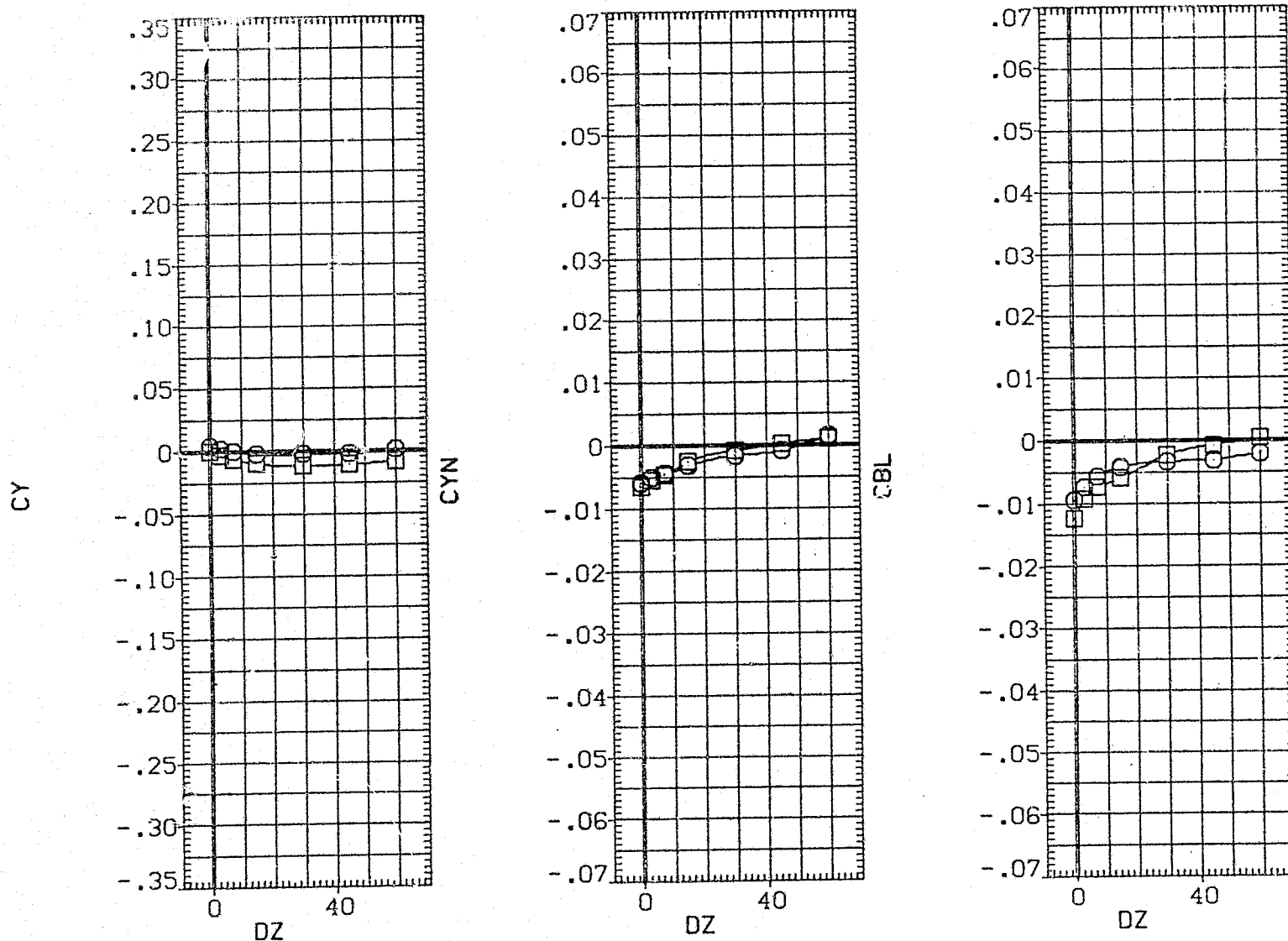


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 (747/1 01 S1) - (01 S1)

D/S (095 - 010)(VGN095)

SYMBOL

ALPHA0
10.000
14.000ALPHAC
ELV-1B
ELEVON
PHI
DY

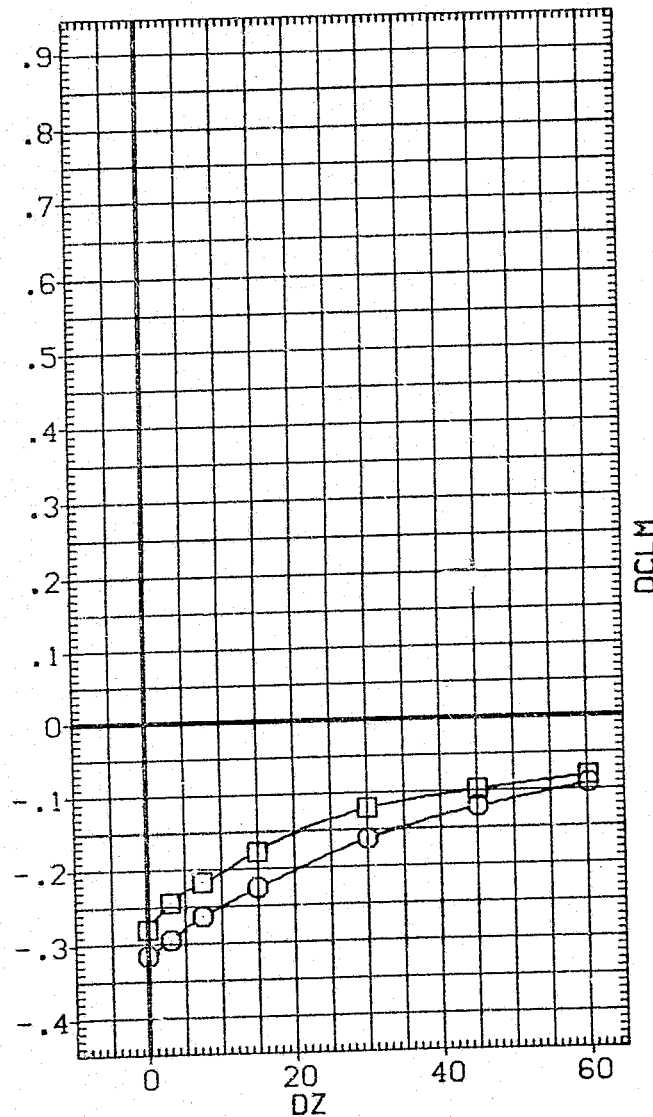
PARAMETRIC VALUES

8.000	BETAC	5.000
.000	ELV-0B	3.000
5.000	MACH	.600
7.500	DX	10.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

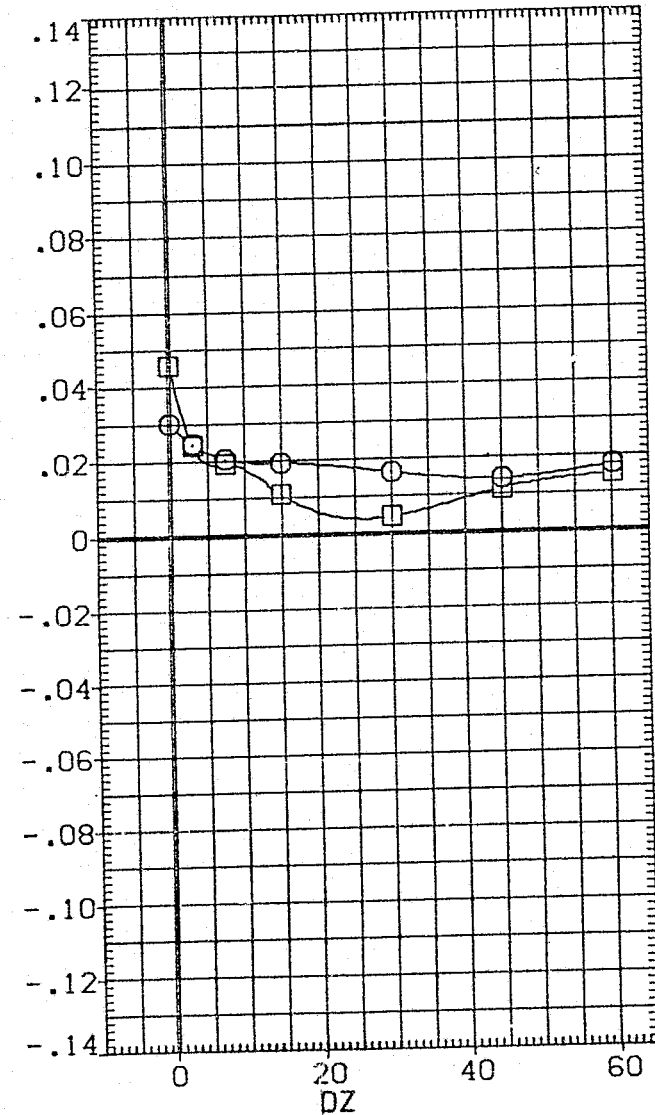


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

PAGE 1312

CA20 (747/1 01 S1) - (01 S1) D/S (095 - 010) (VGN095)

SYMBOL	PARAMETRIC VALUES
○	ALPHAC 8.000 BETAC 5.000
□	ELV-IB .000 ELV-OB 3.000
	ELEVON 5.000 MACH .600
	PHI 7.500 DX 10.000
	DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.8800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

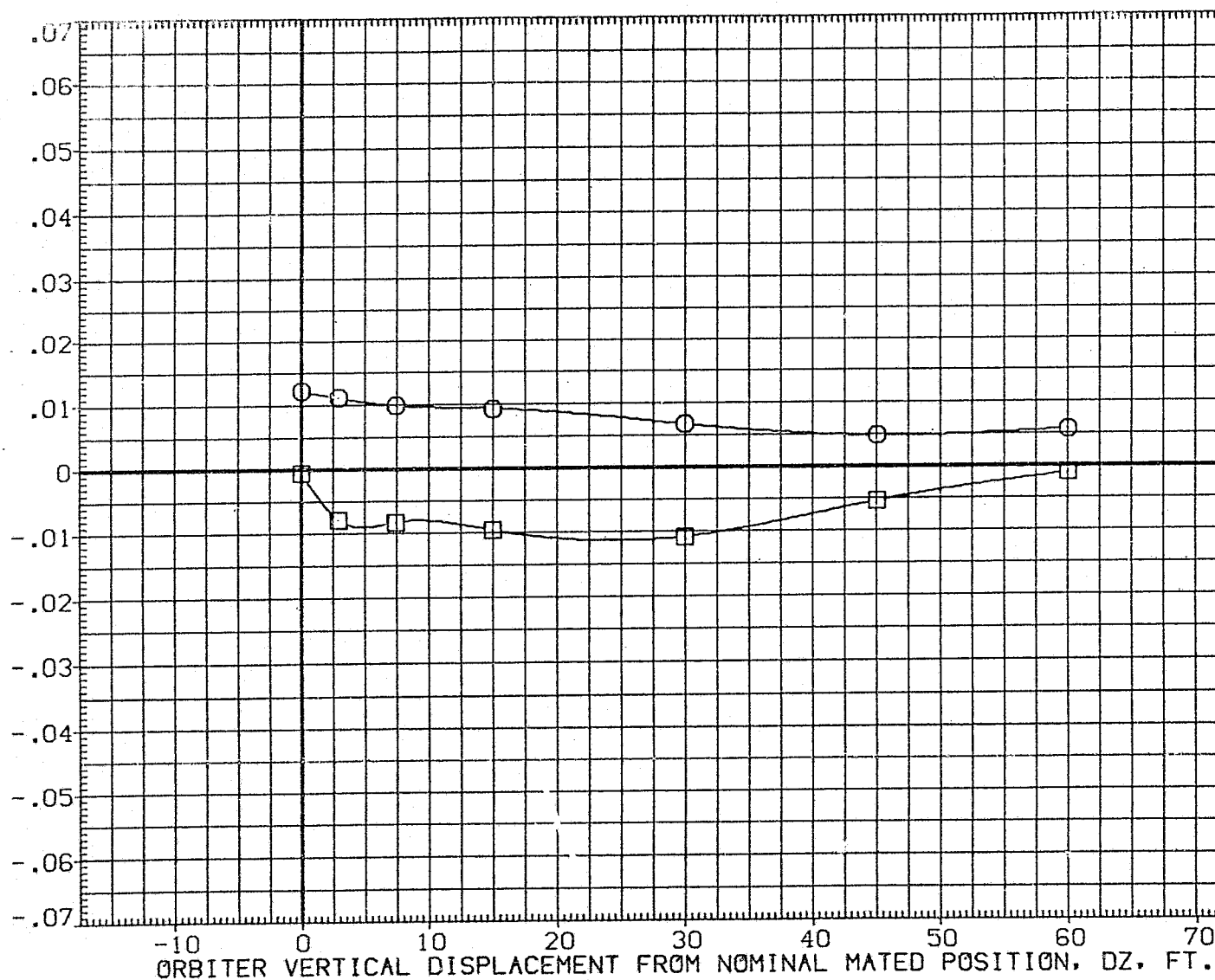


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC 5.000
□	14.000	ELV-IB .000 ELV-OB 3.000
		ELEVON 5.000 MACH .600
		PHI 7.500 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
IREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

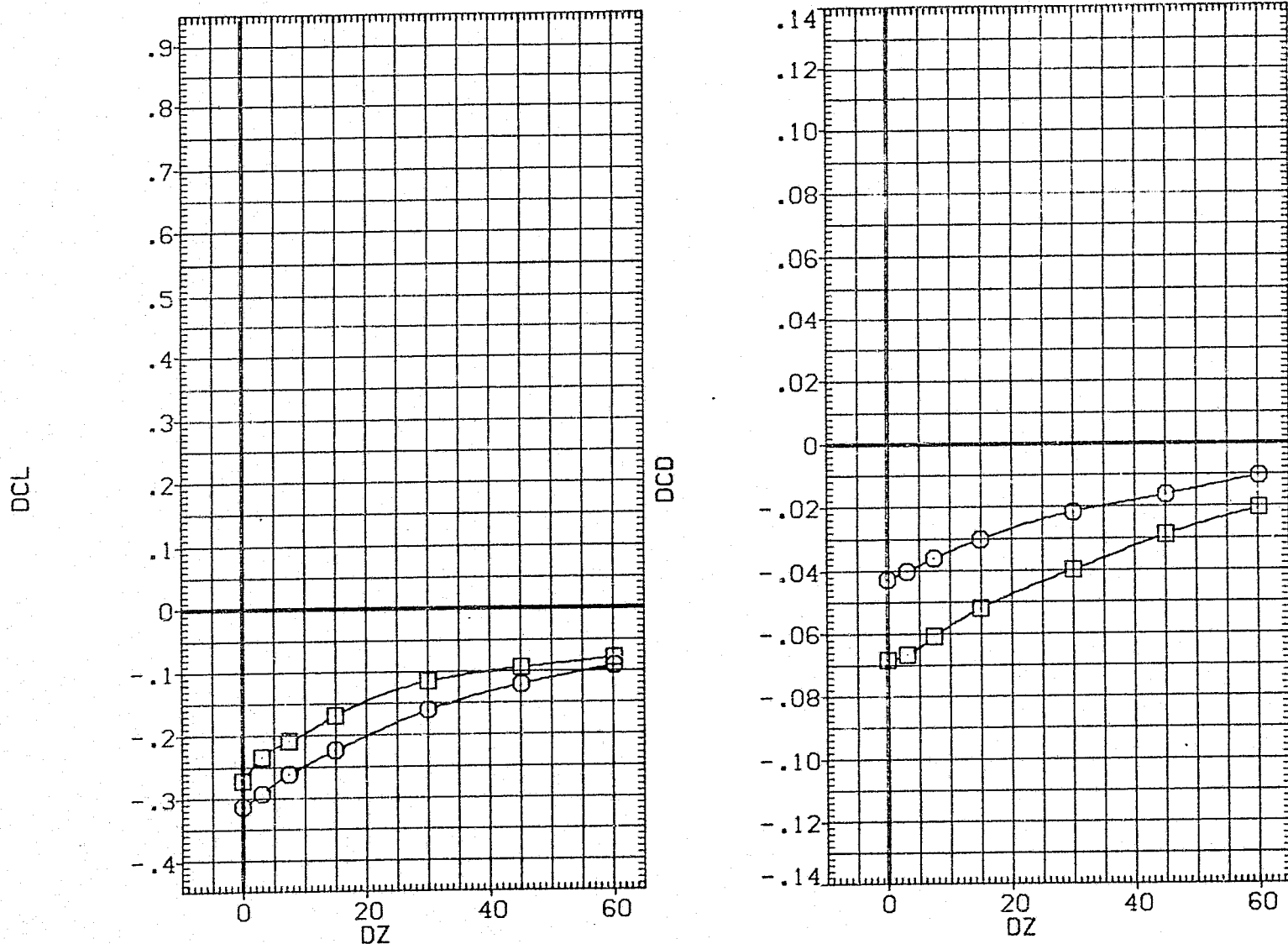


FIG 27 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (01 AT PHI = 7.5)

CA20 747/1 02 S1

CARRIER DATA (MGN126)

SYMBOL	UNIT	PARAMETRIC VALUES			
○	0.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

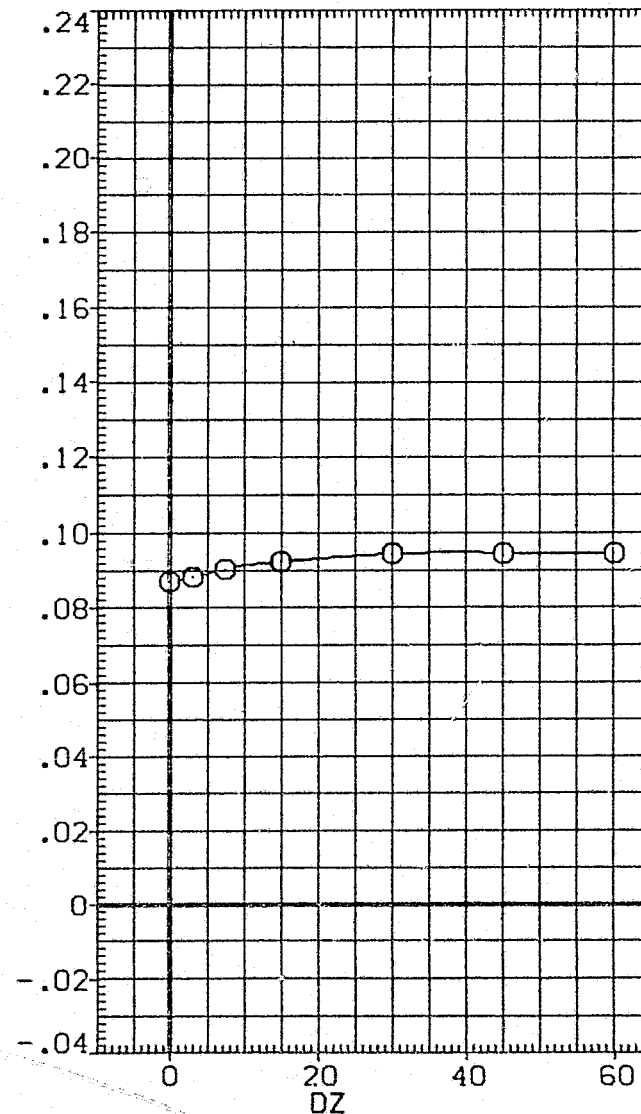
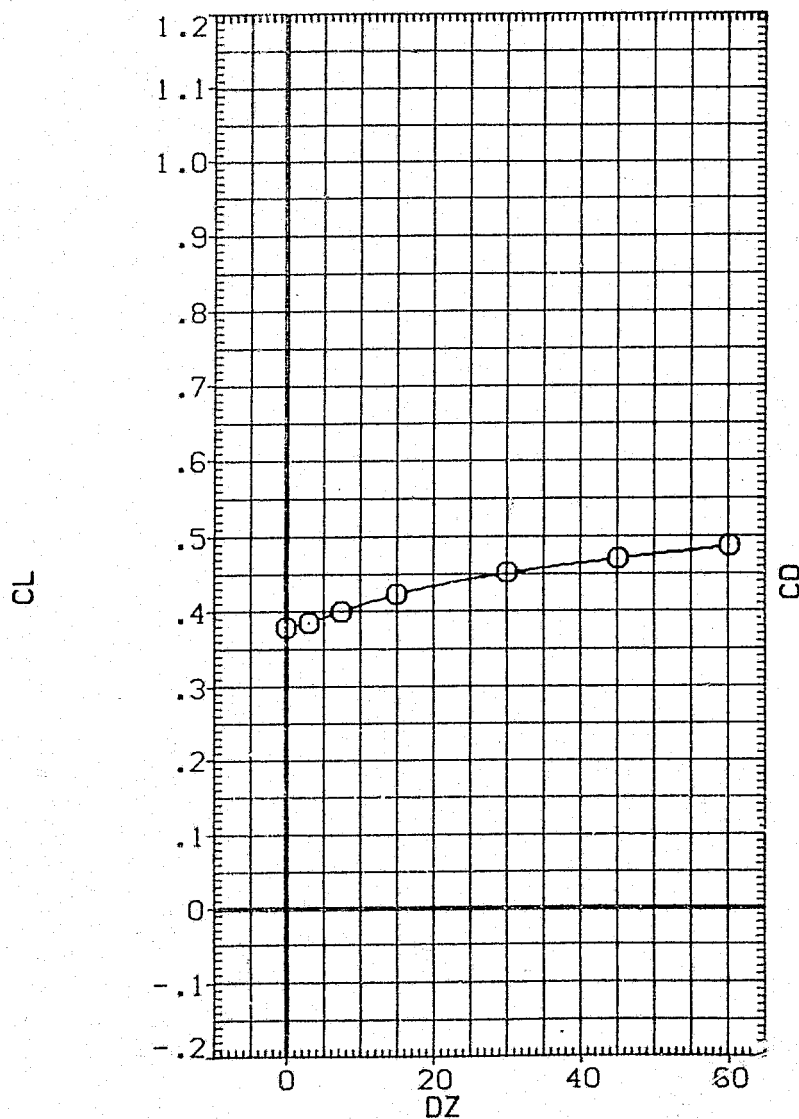


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN126)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

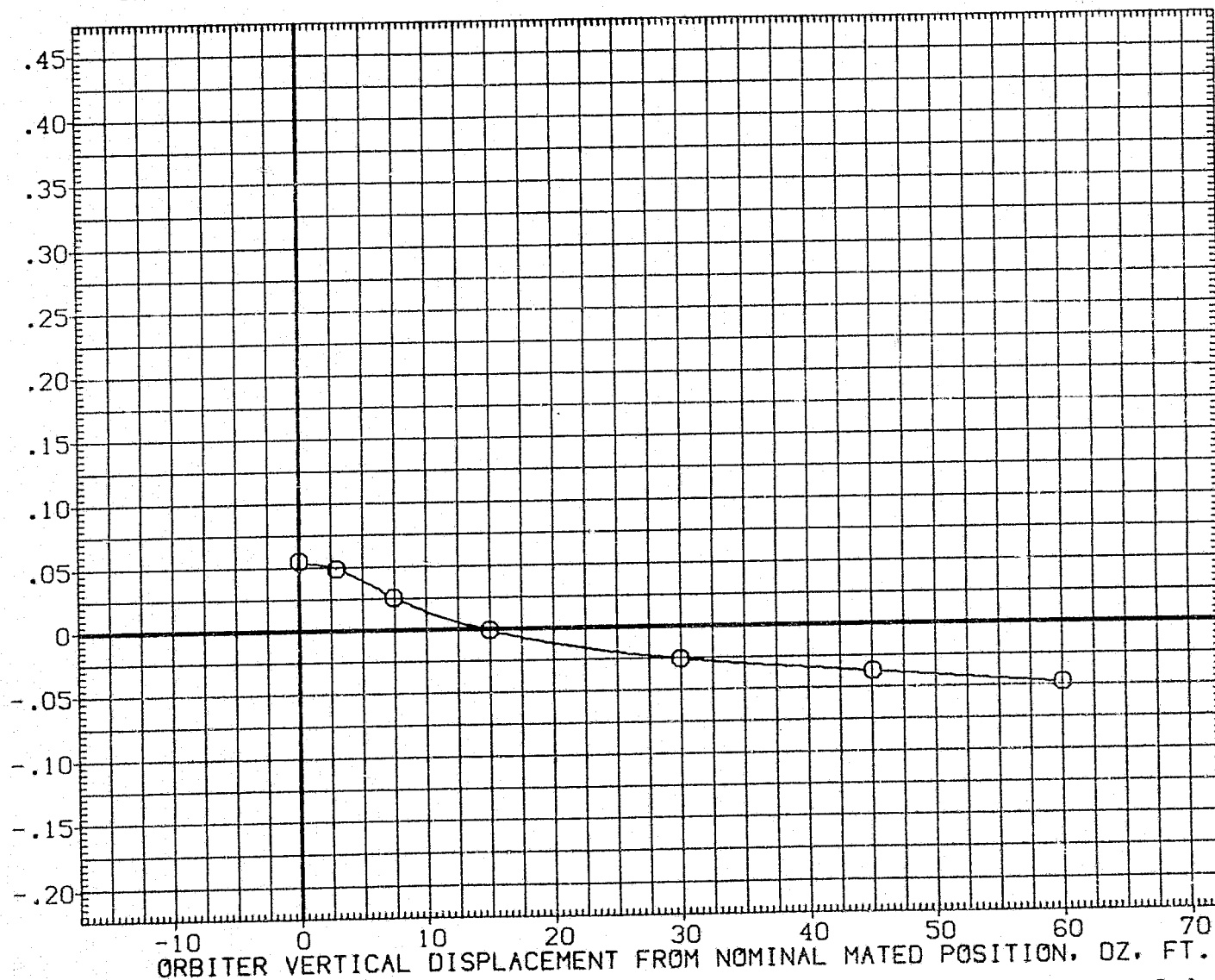


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN126)

SYMBOL

O

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-1B	.000	ELV-DB	3.000
ELEVON	5.000	MACH	.600
BETA0	.000	PHI	.000
DY	.000	DX	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7500	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0000	

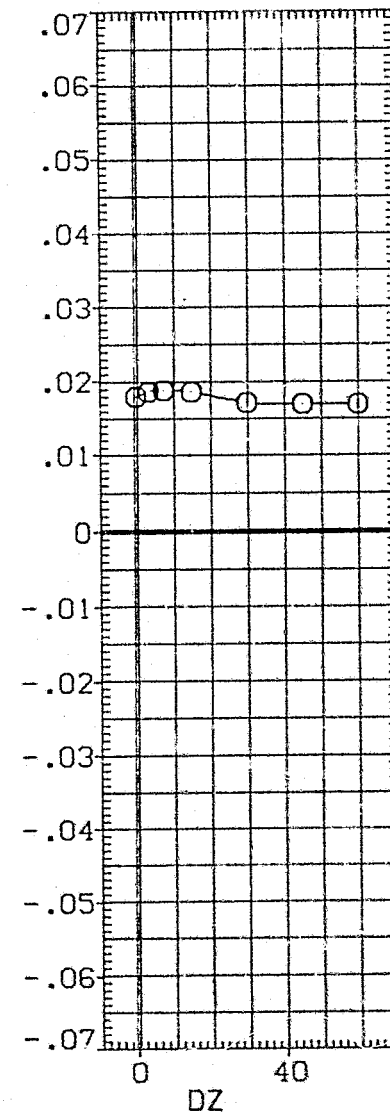
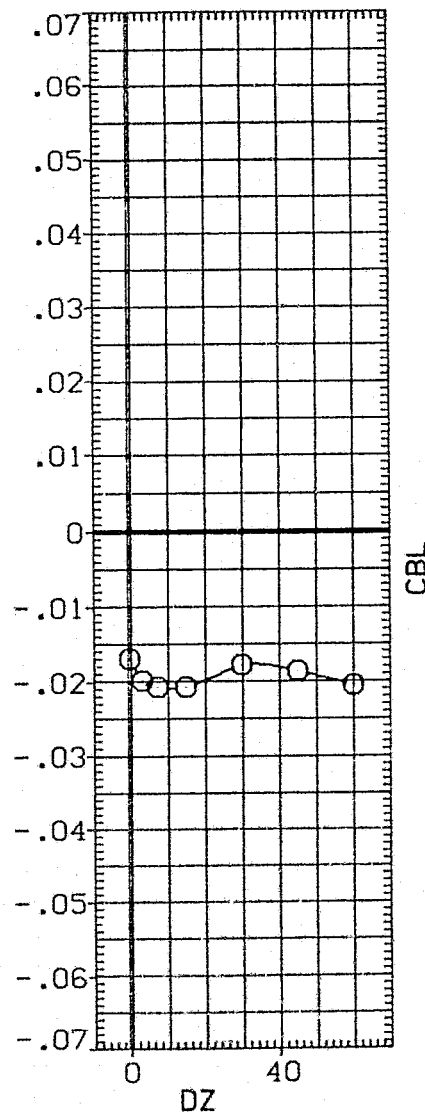
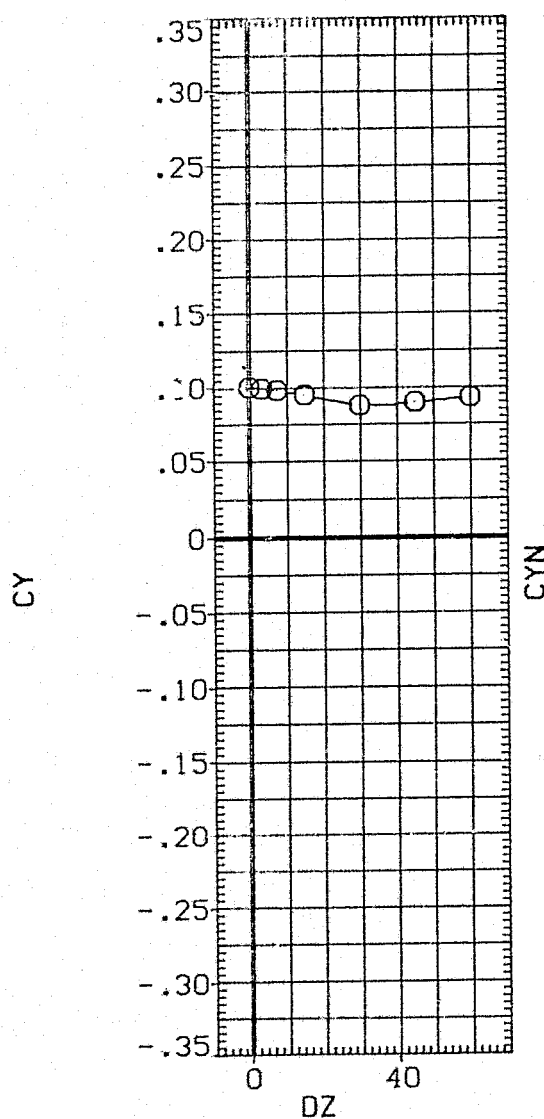


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 4.000	BETAC -5.000
		ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		BETA0 .000	PHI .000
		DY .000	DX .000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

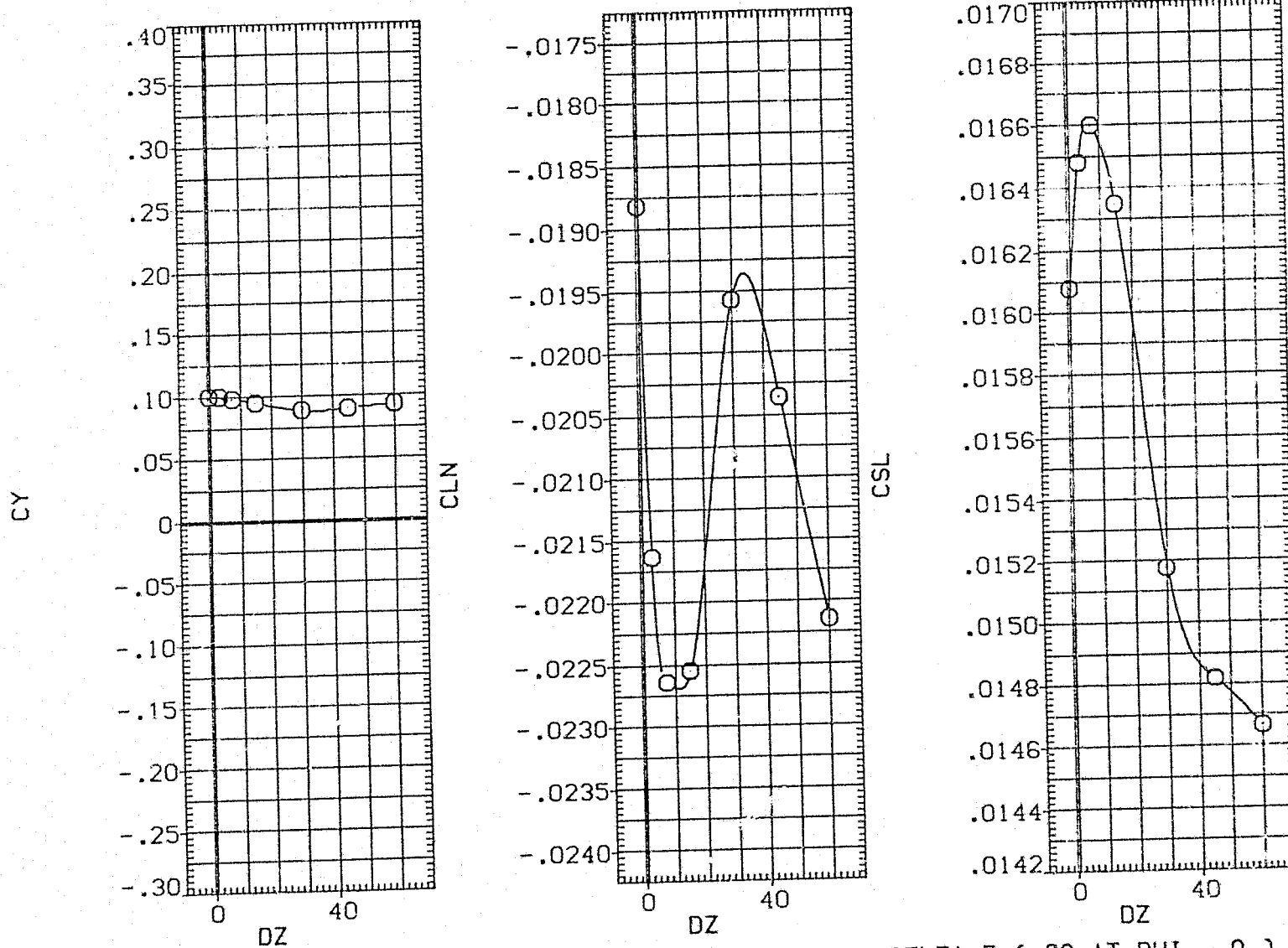


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (126 - 034) (UGN126)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

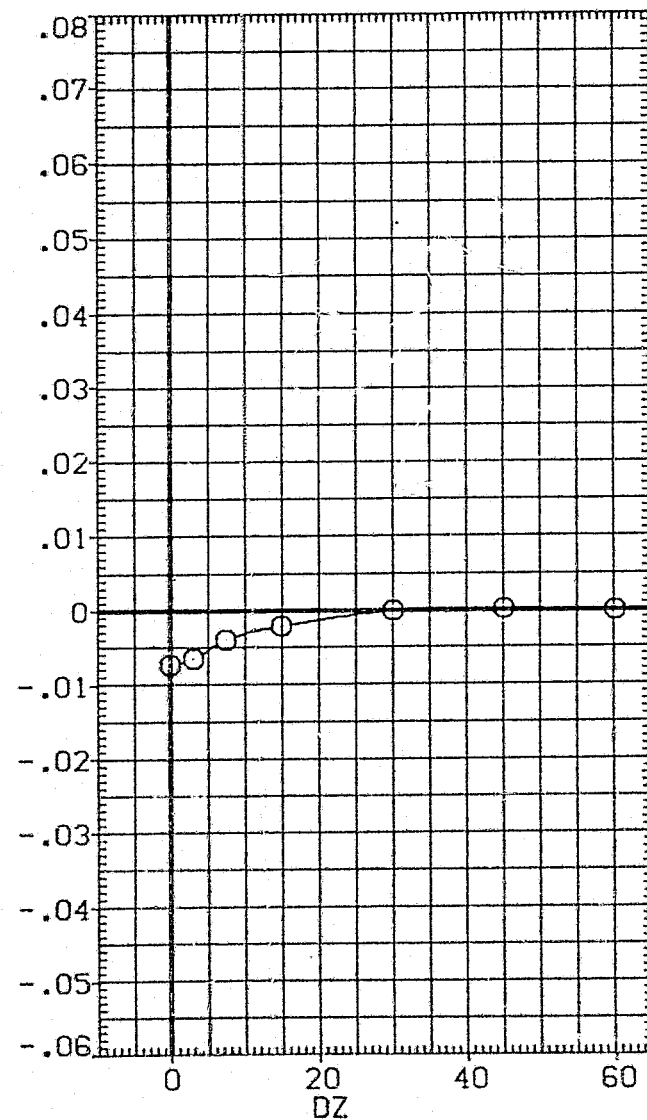
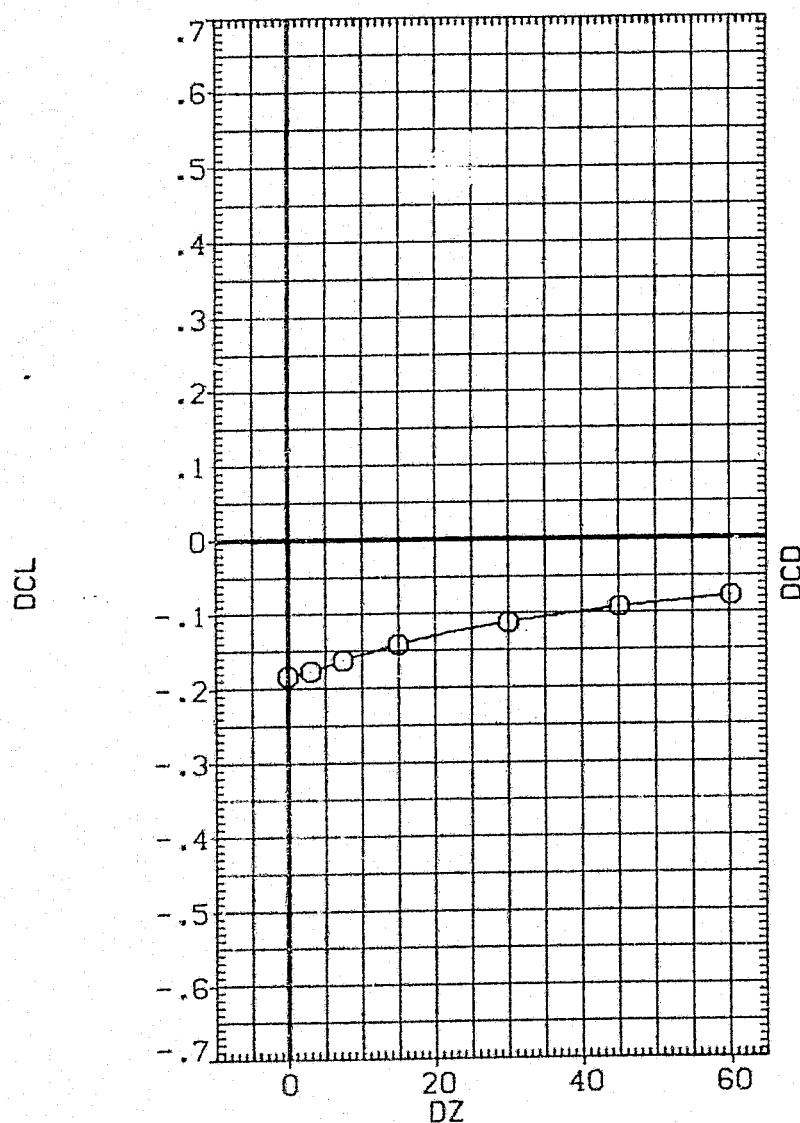


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL
○ALPHA0
10.000

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SG.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

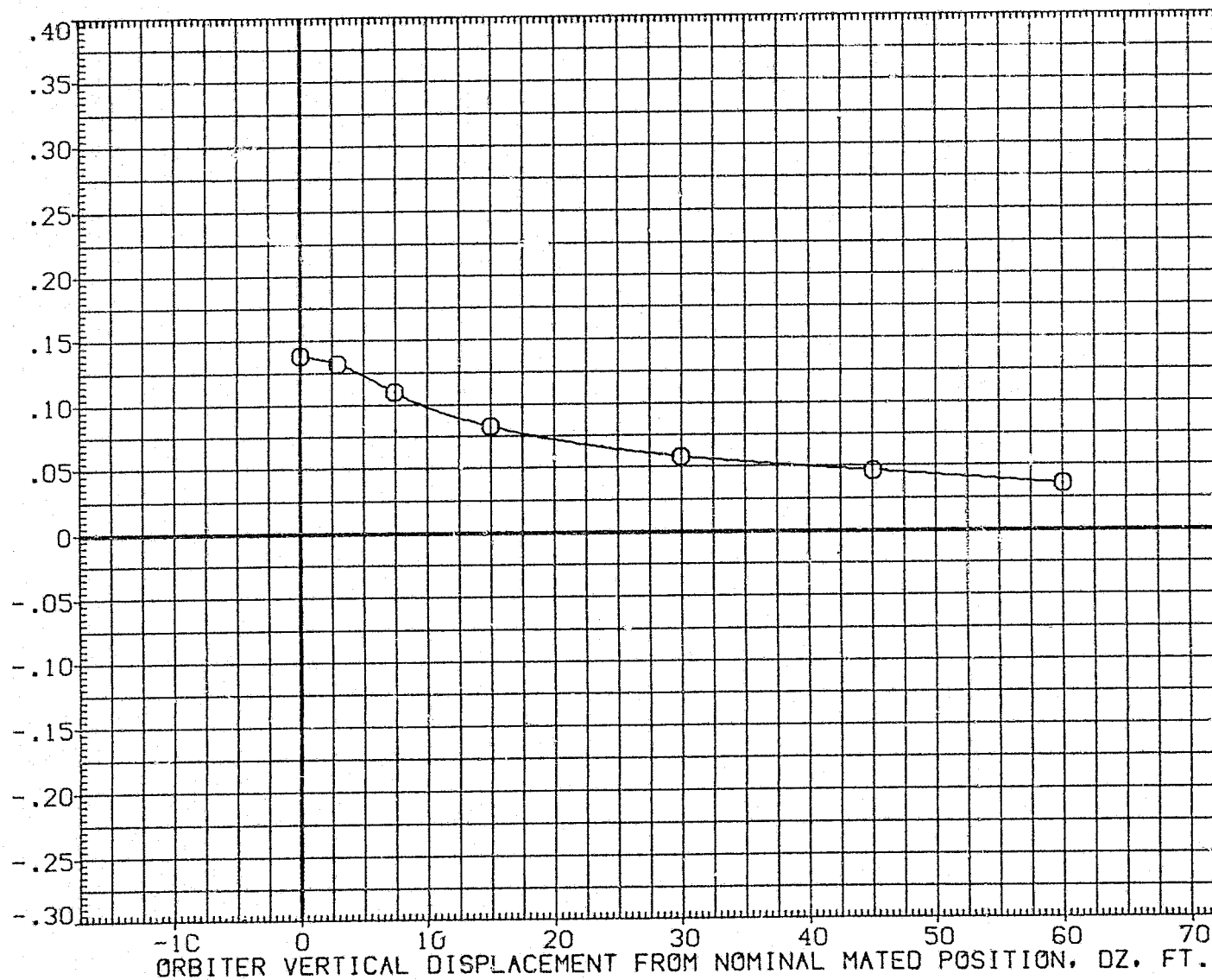


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (126 - 034) (UGN126)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

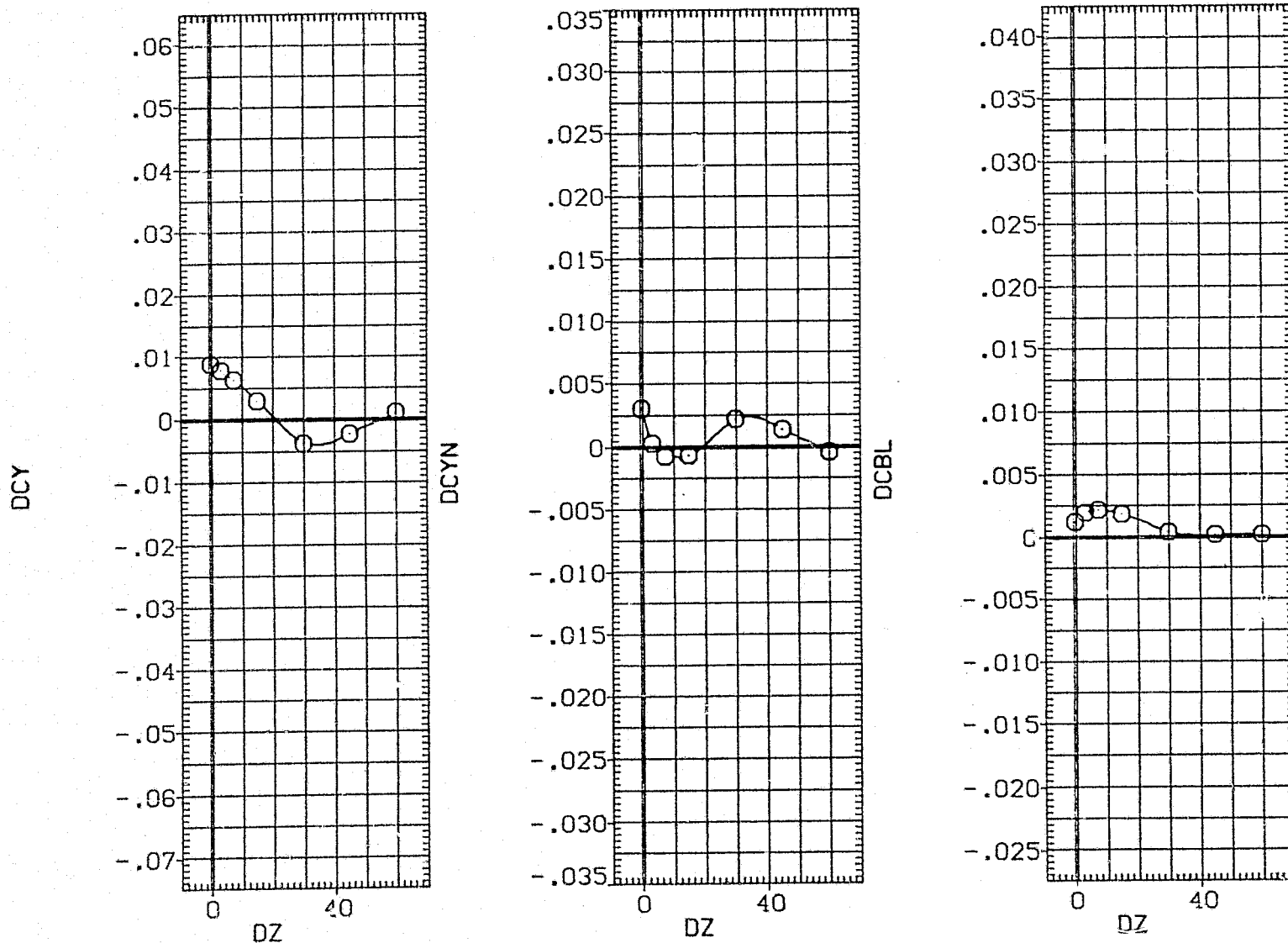


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

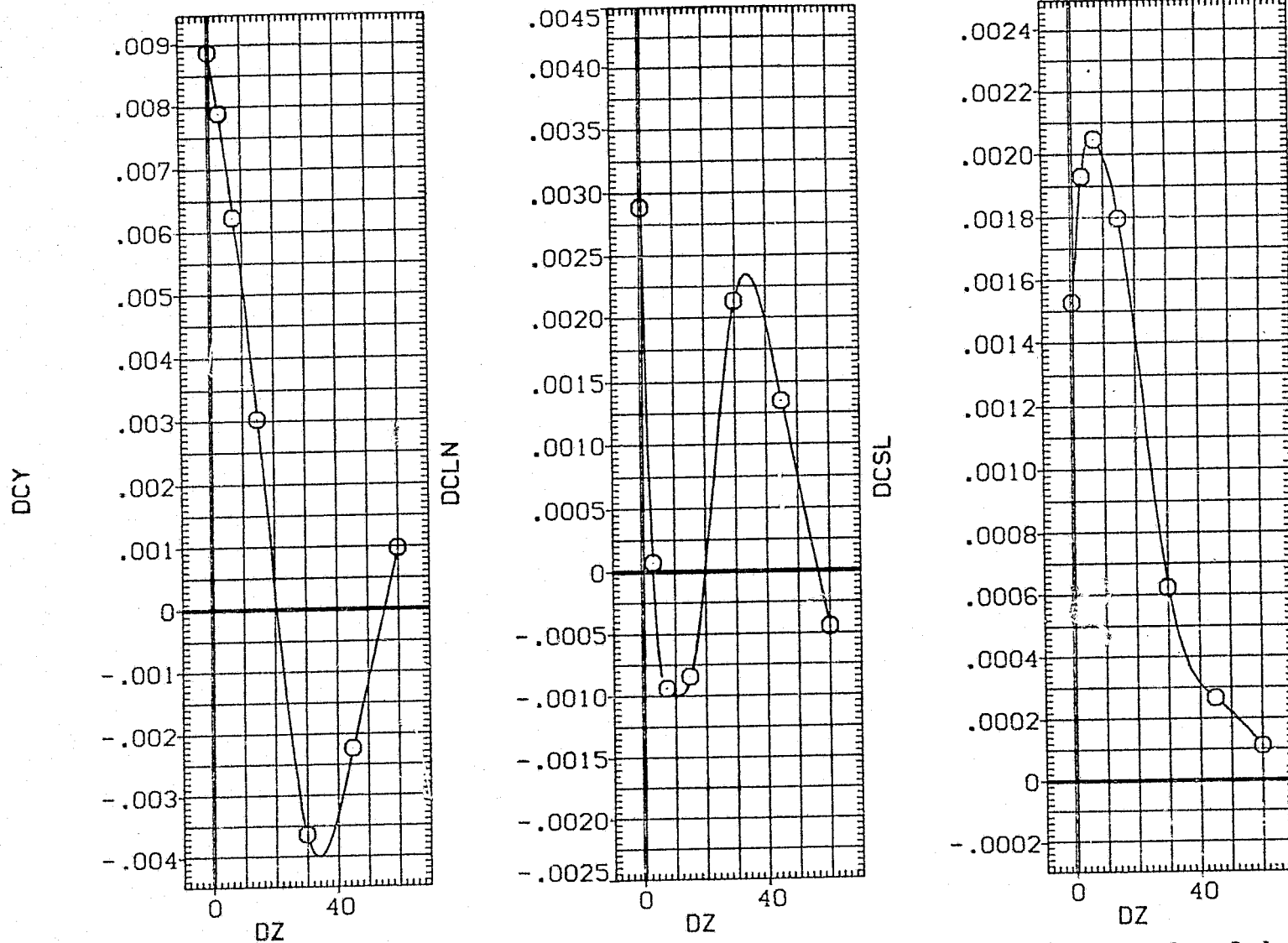


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA(MGN127)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	1.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETAD	.000	PHI	.000
		DY	.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

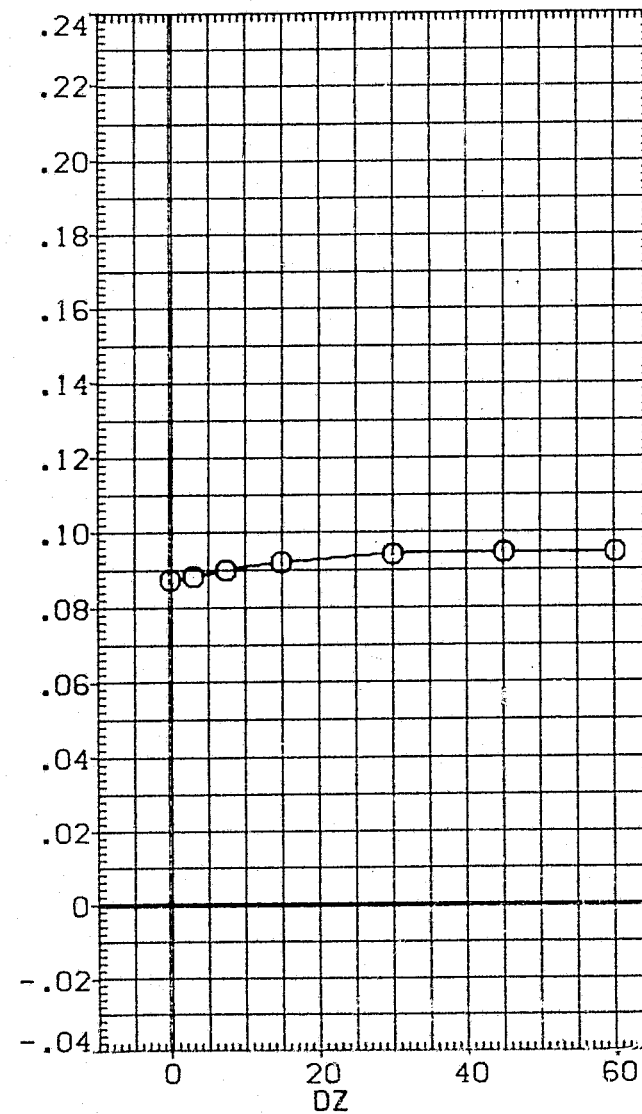
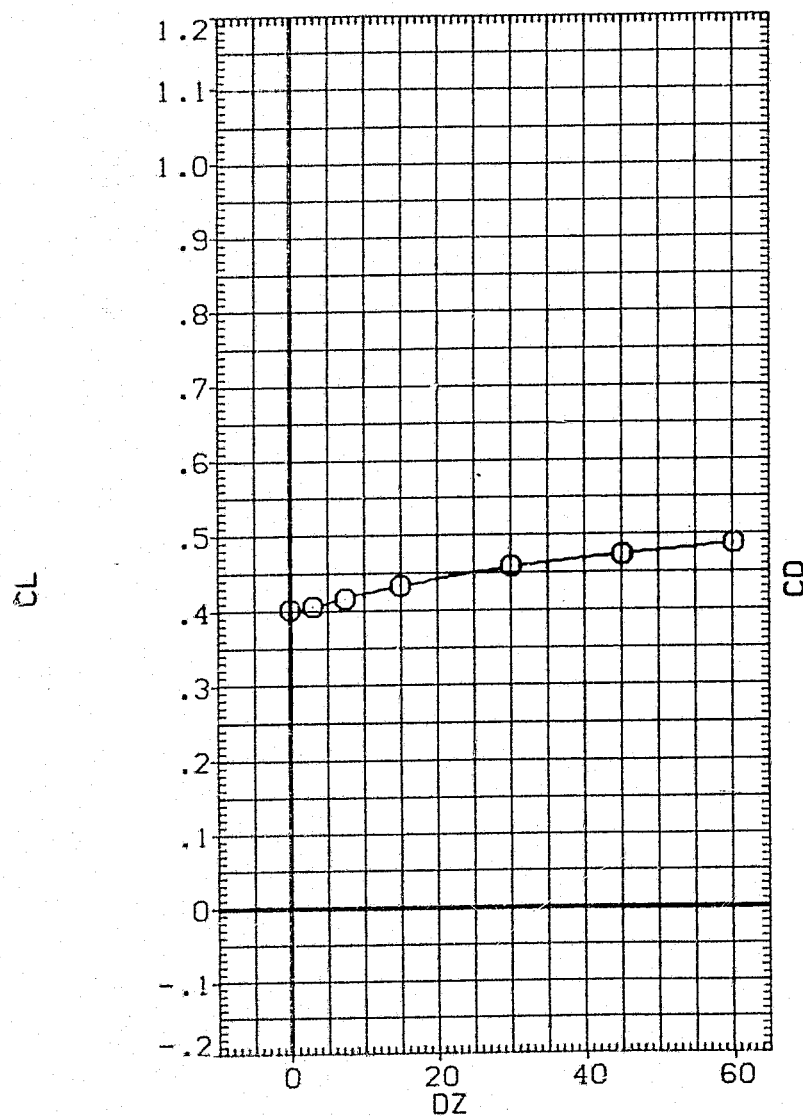


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN127)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

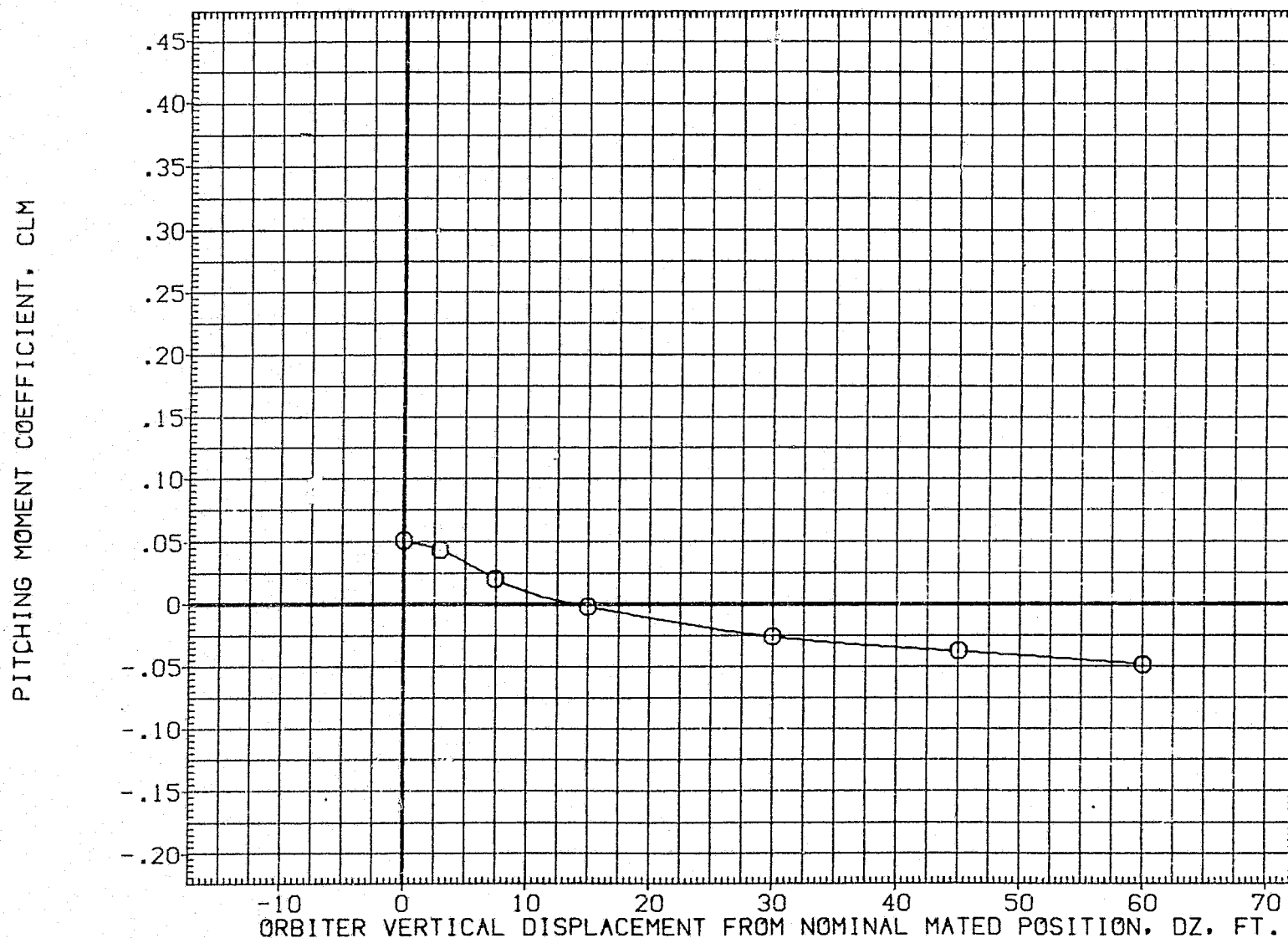


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN127)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
		ELV-IB .000 ELV-OB 3.000
		ELEVON 5.000 MACH .600
		BETA0 .000 PHI .000
		DY .000 DX 10.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

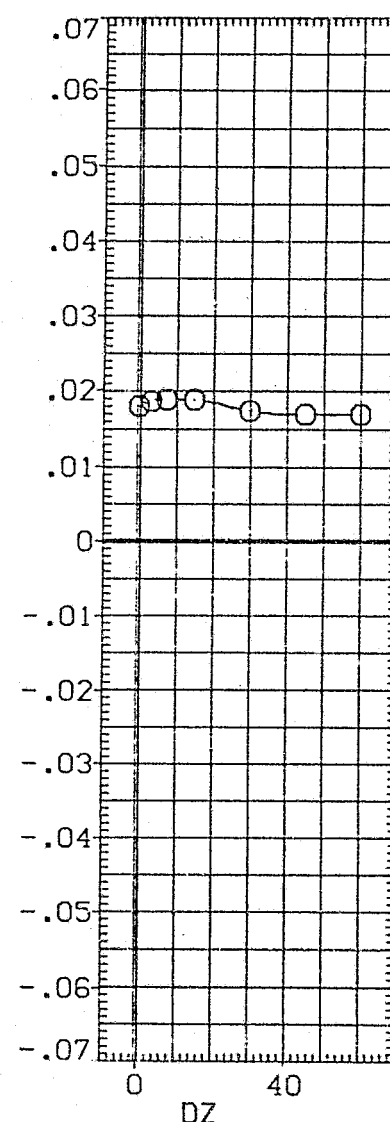
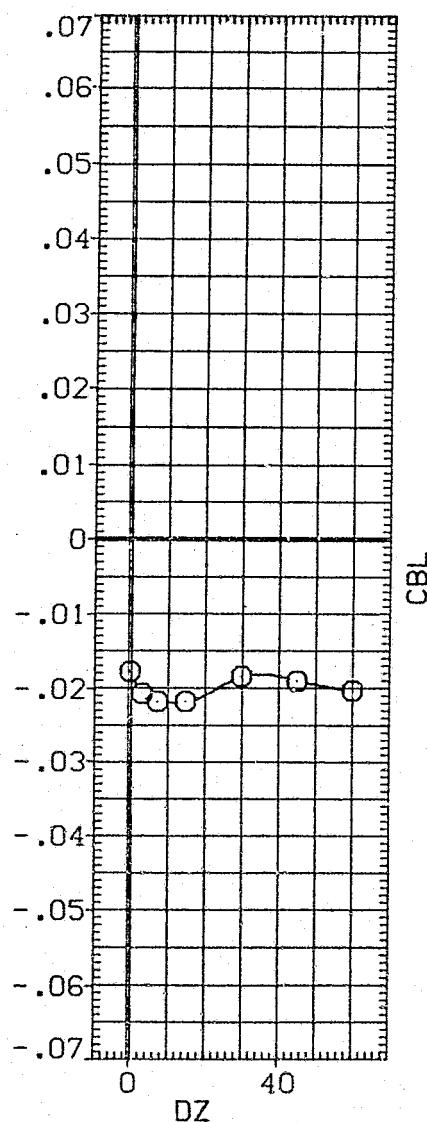
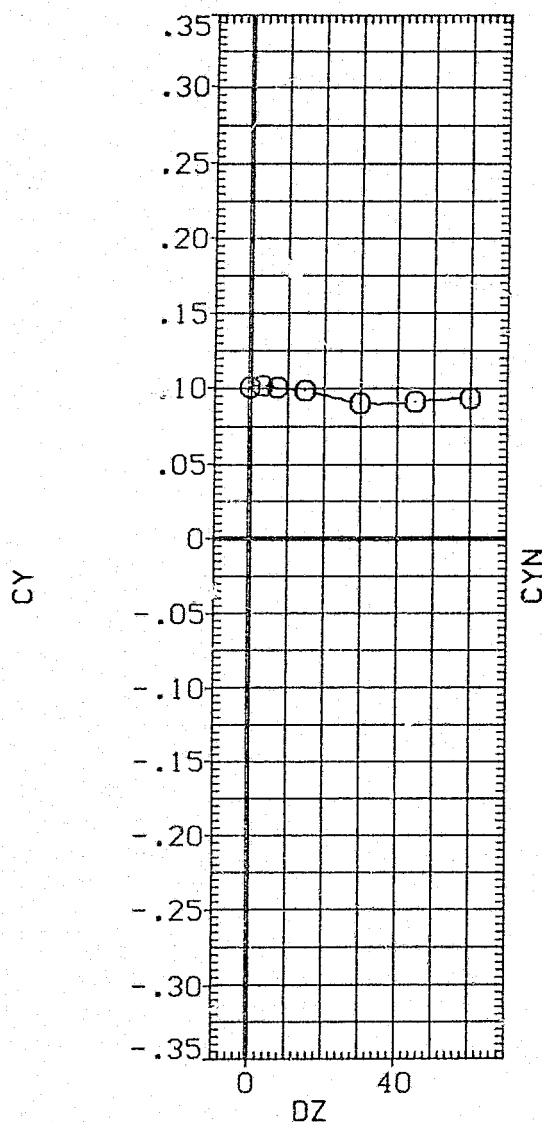


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA(MGN127)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
DREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

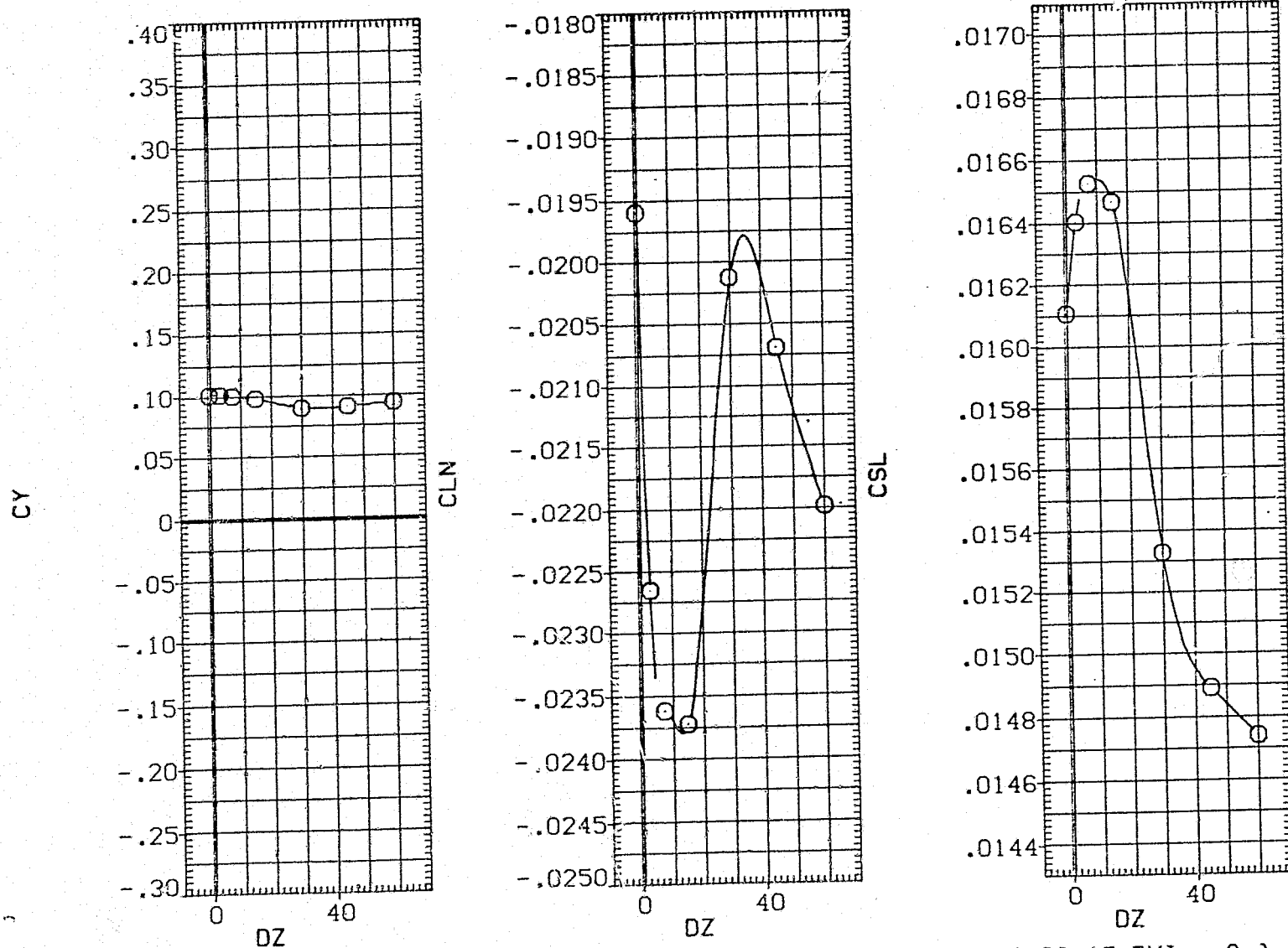


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (127 - 034)(UGN127)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

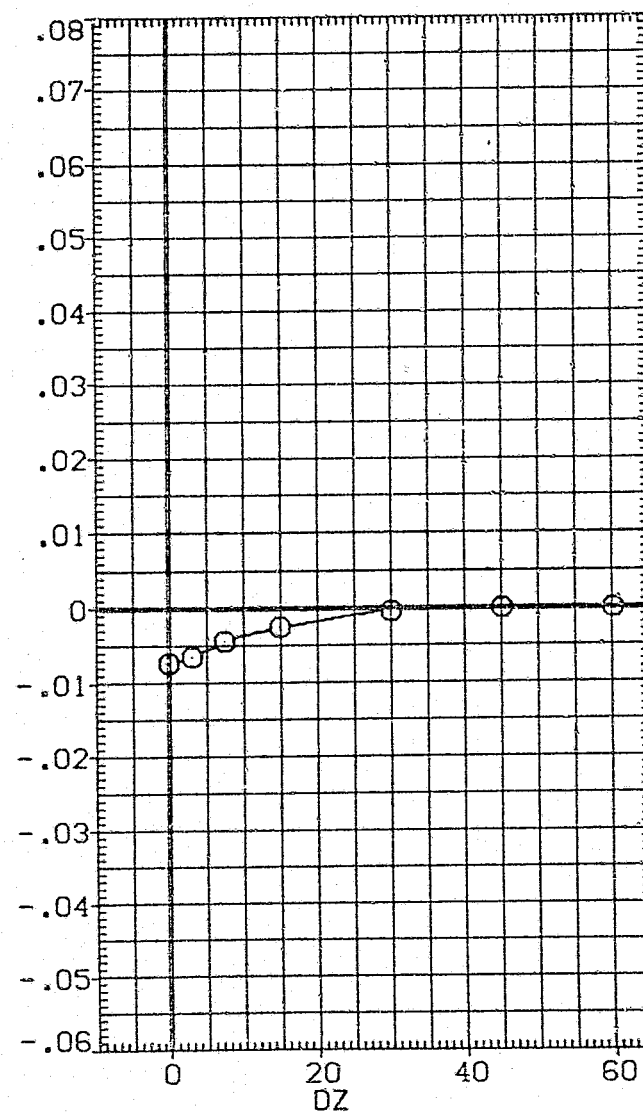
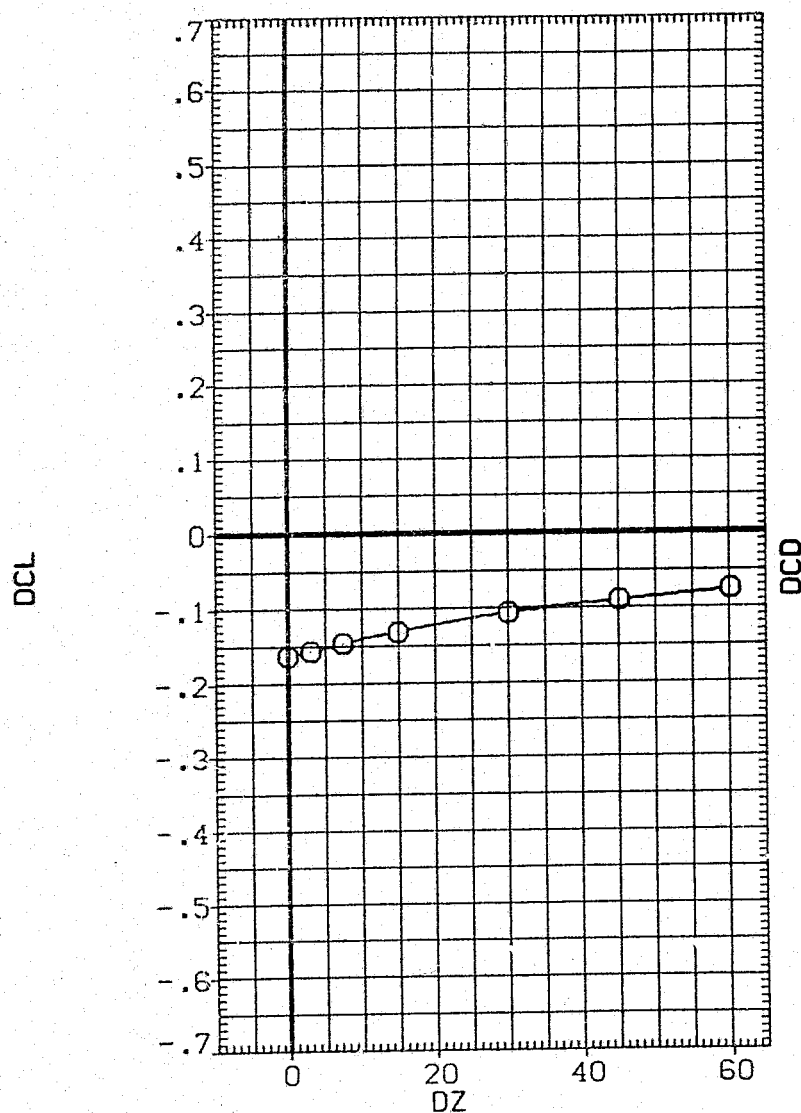


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

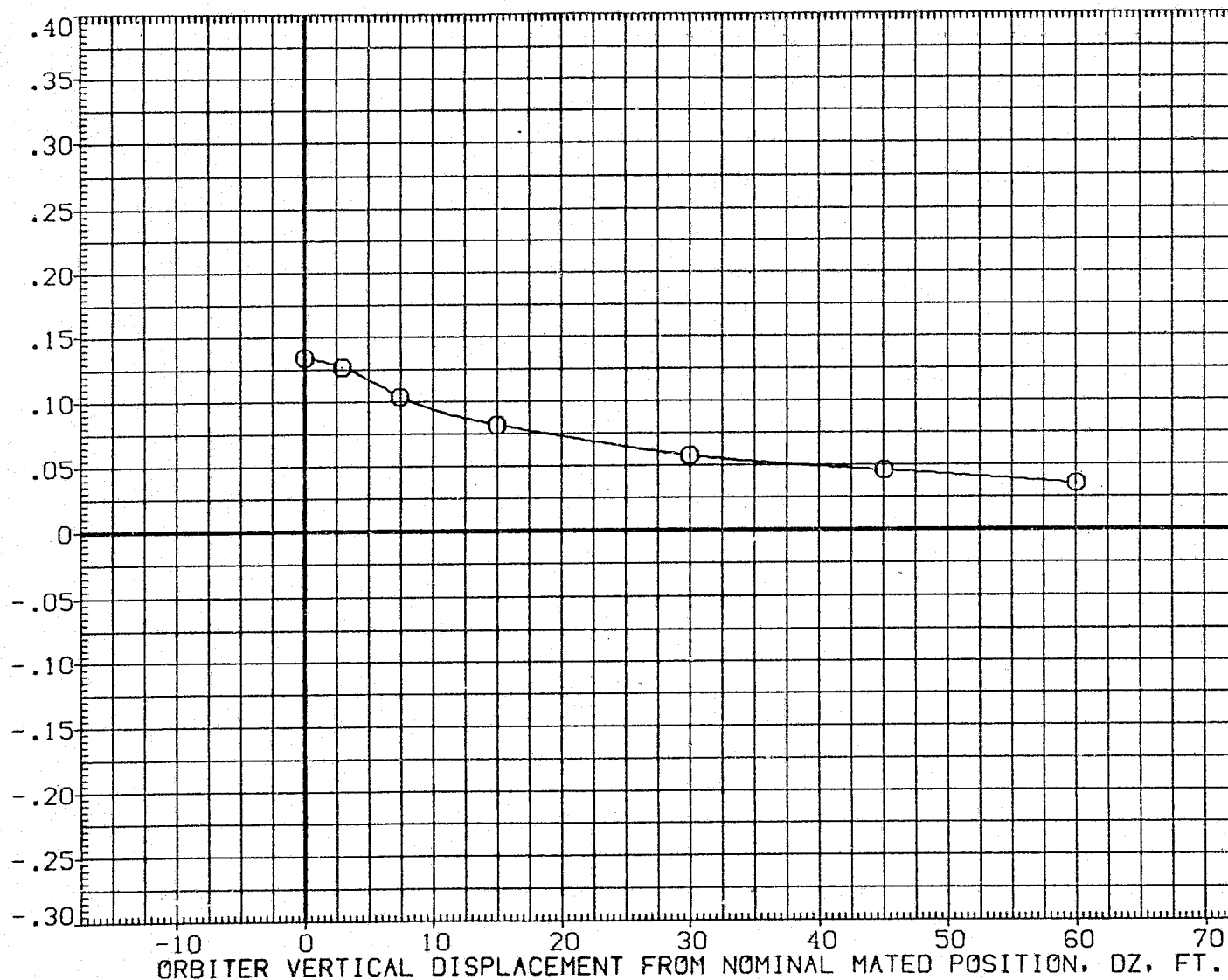


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (127 - 034) (UGN127)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

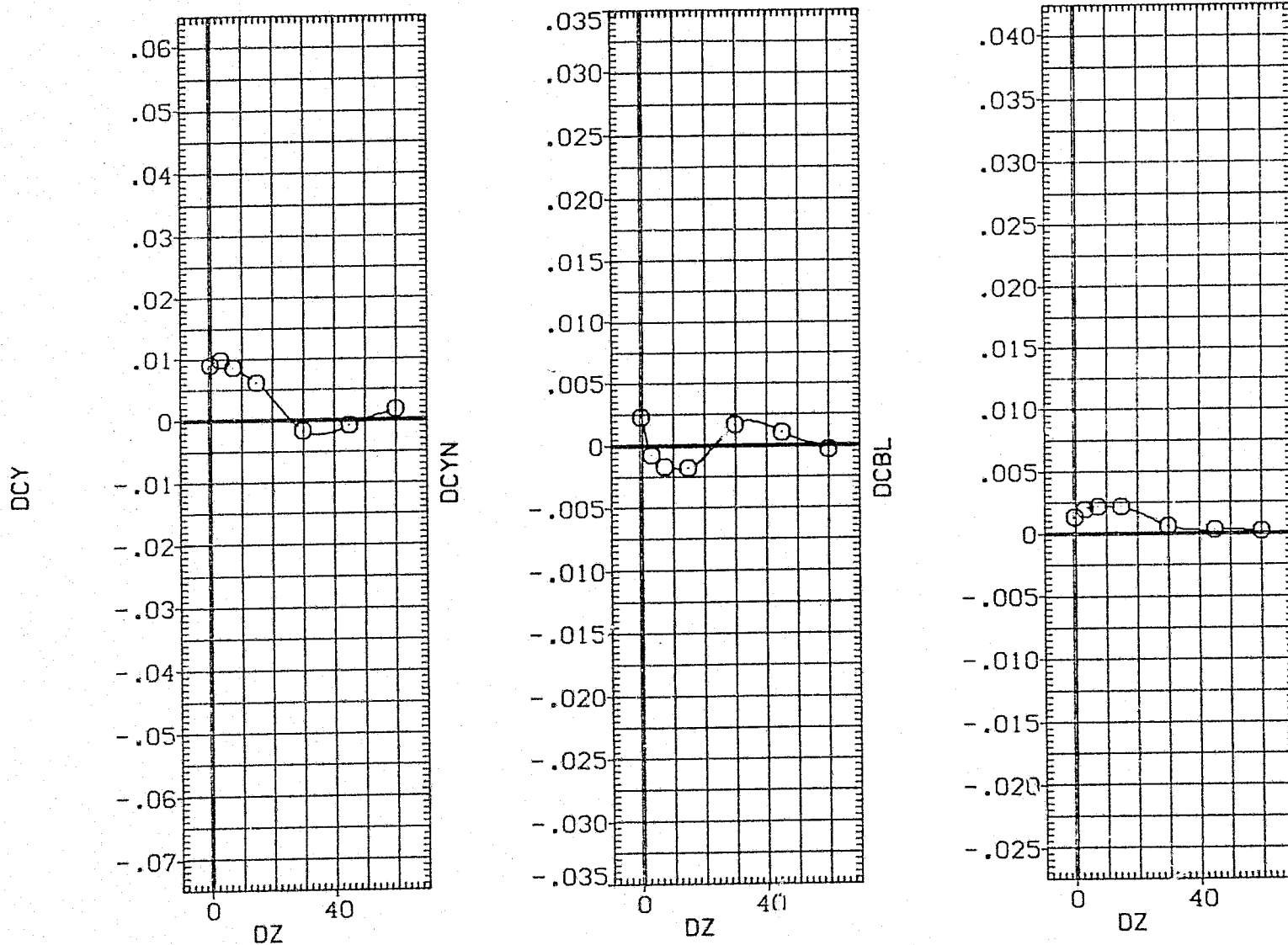


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

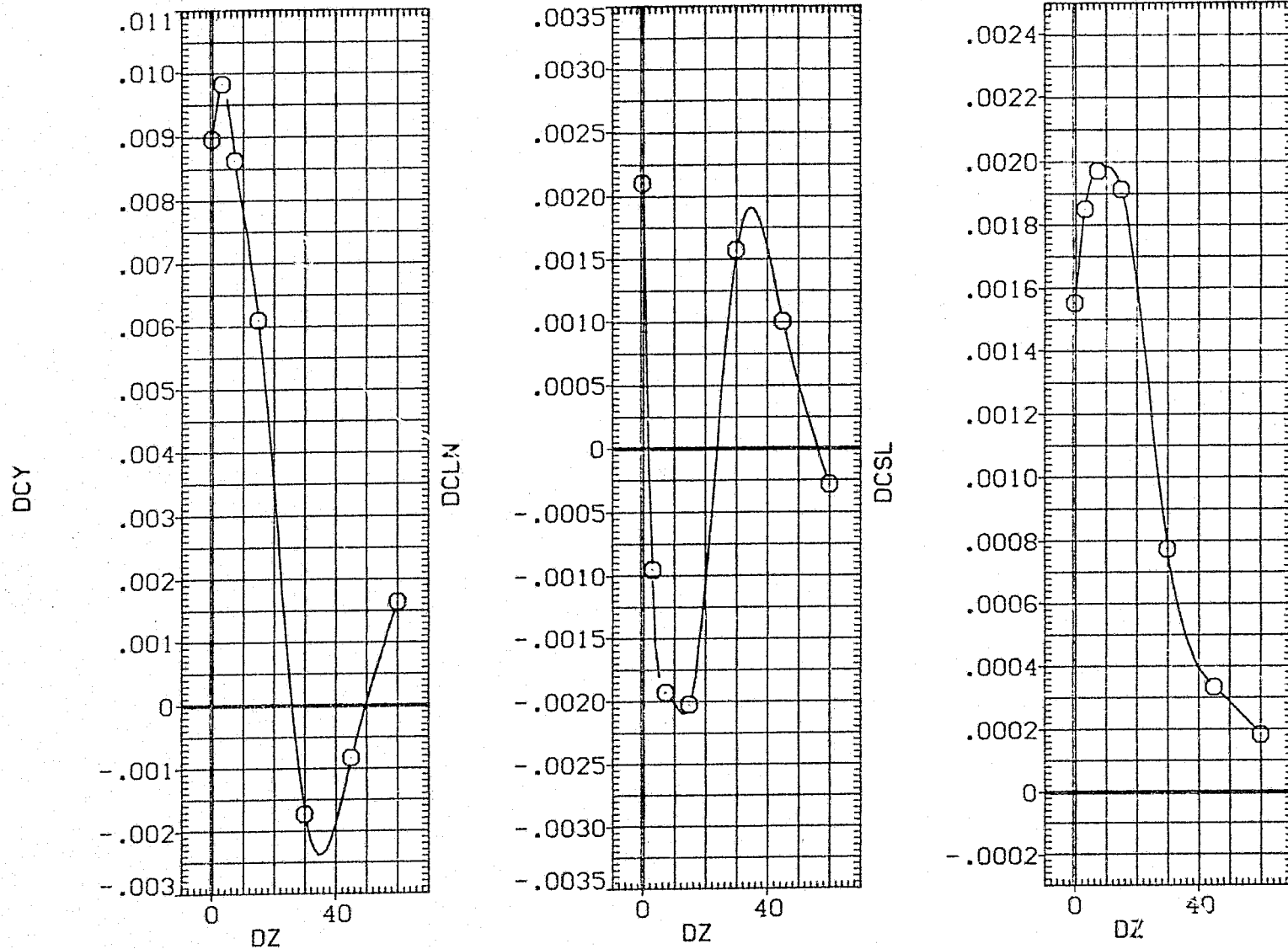


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA(MGN128)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	20.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

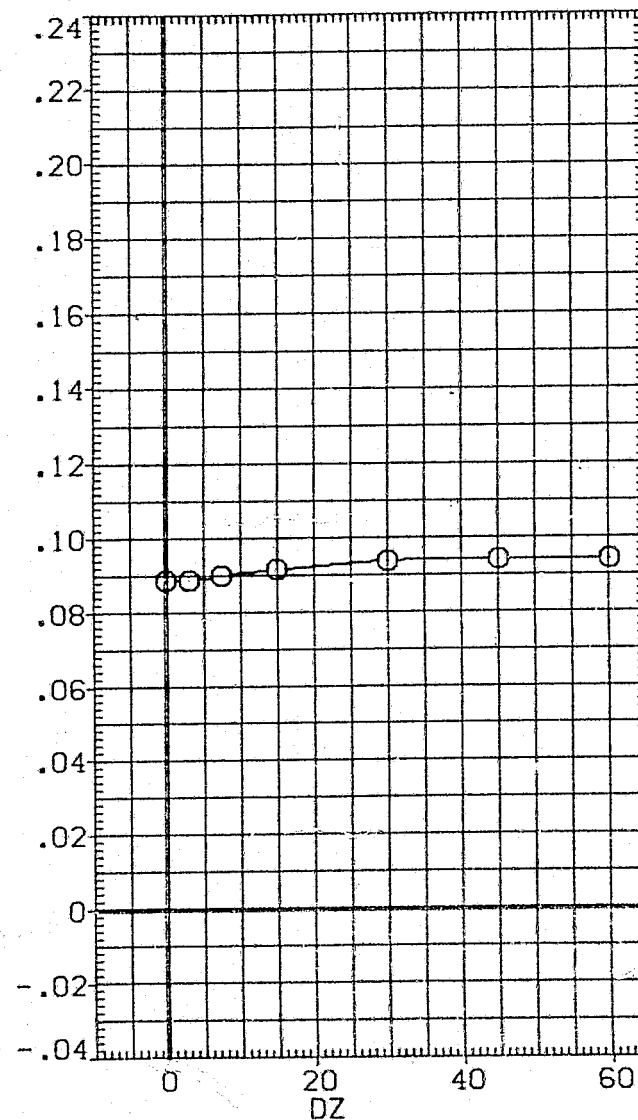
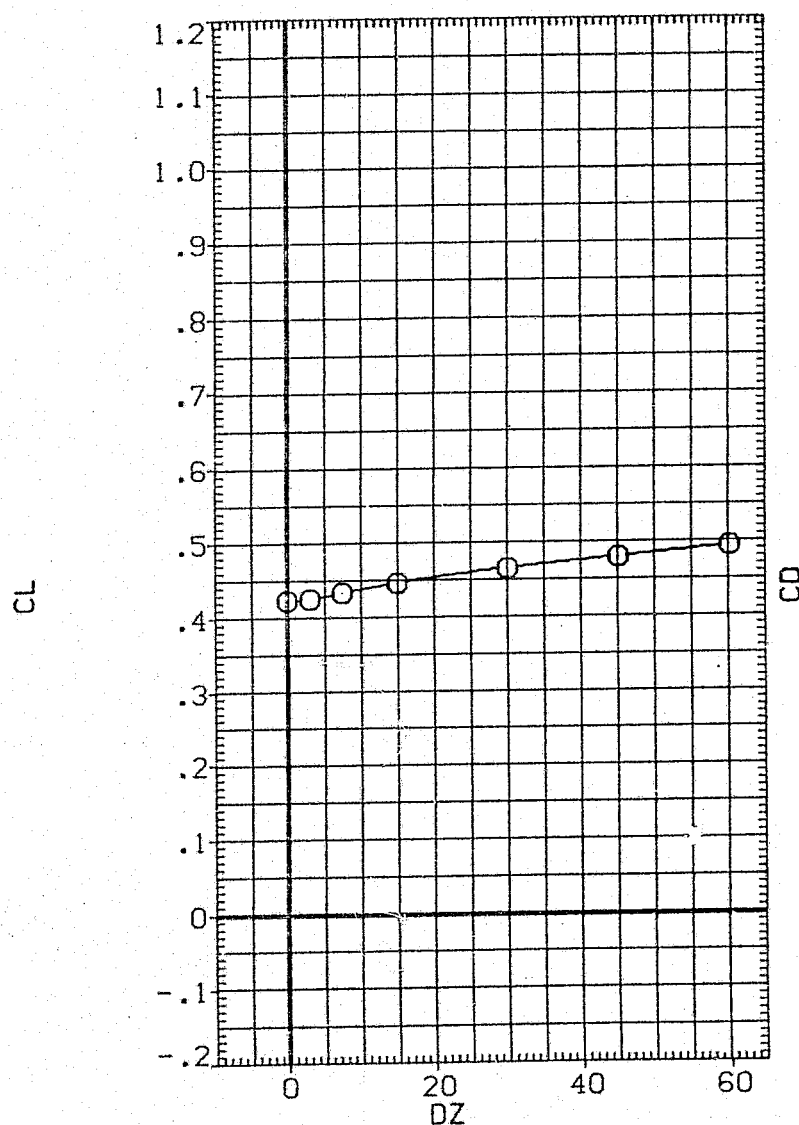


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	20.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

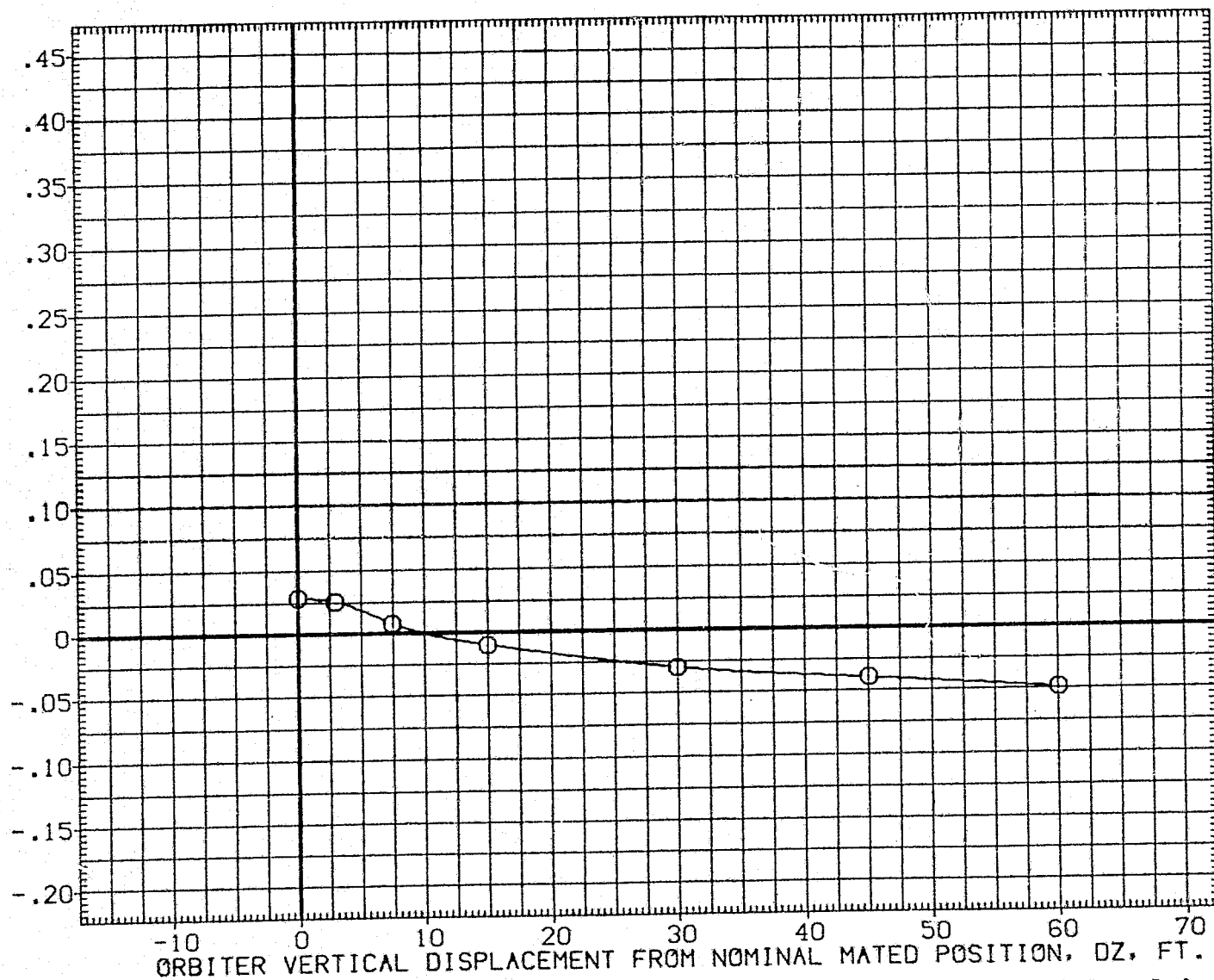


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA(MGN128)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	20.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

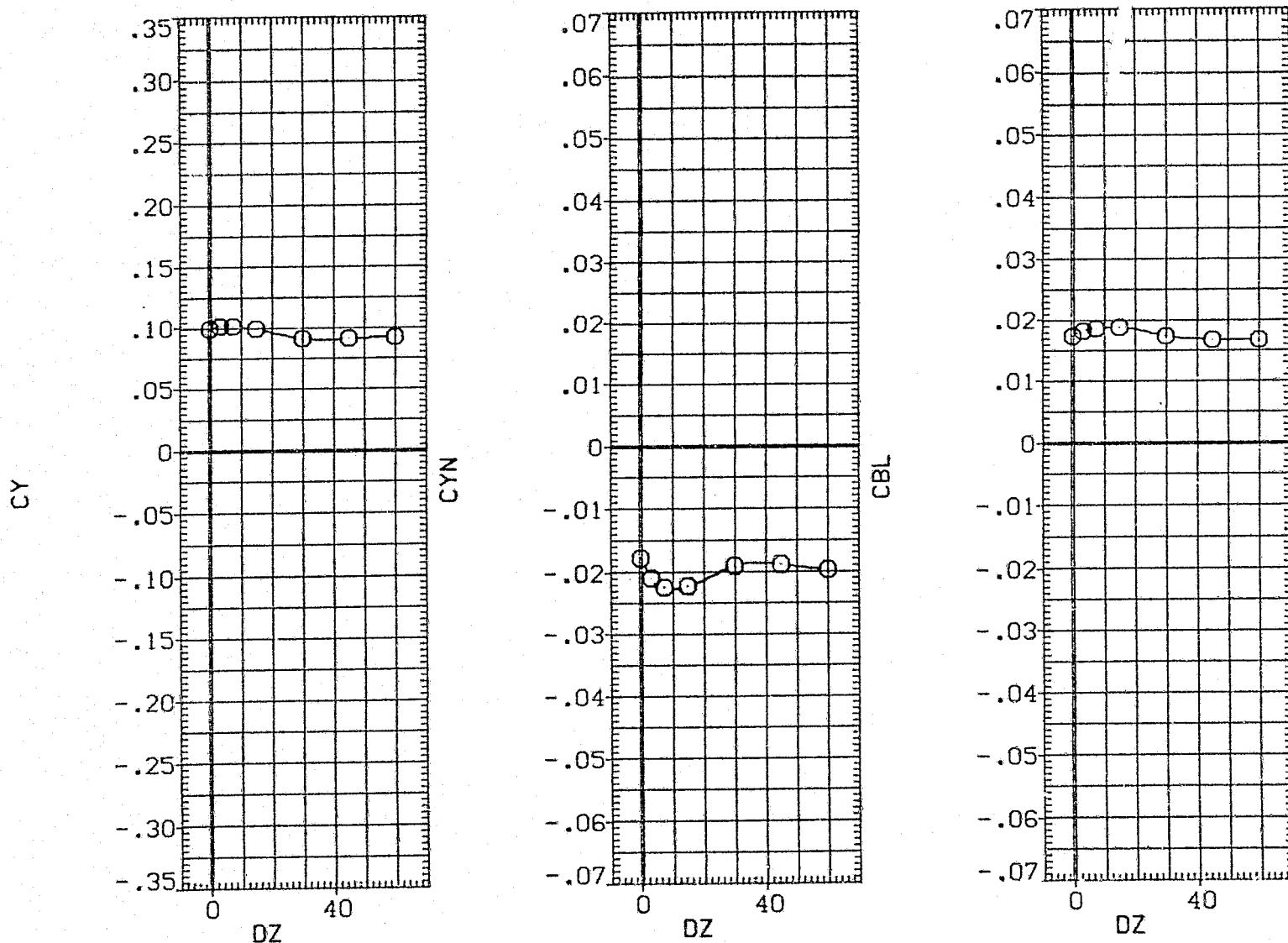


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC
○	10.000	4.000	ELV-1B	-5.000
		.000	ELV-0B	3.000
		5.000	MACH	.600
		.000	PHI	.000
		.000	DX	20.000

REFERENCE INFORMATION		
SREF	5500.0000	55.00
LREF	327.7000	IN.
BREF	2348.0400	N.
XMRP	1338.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

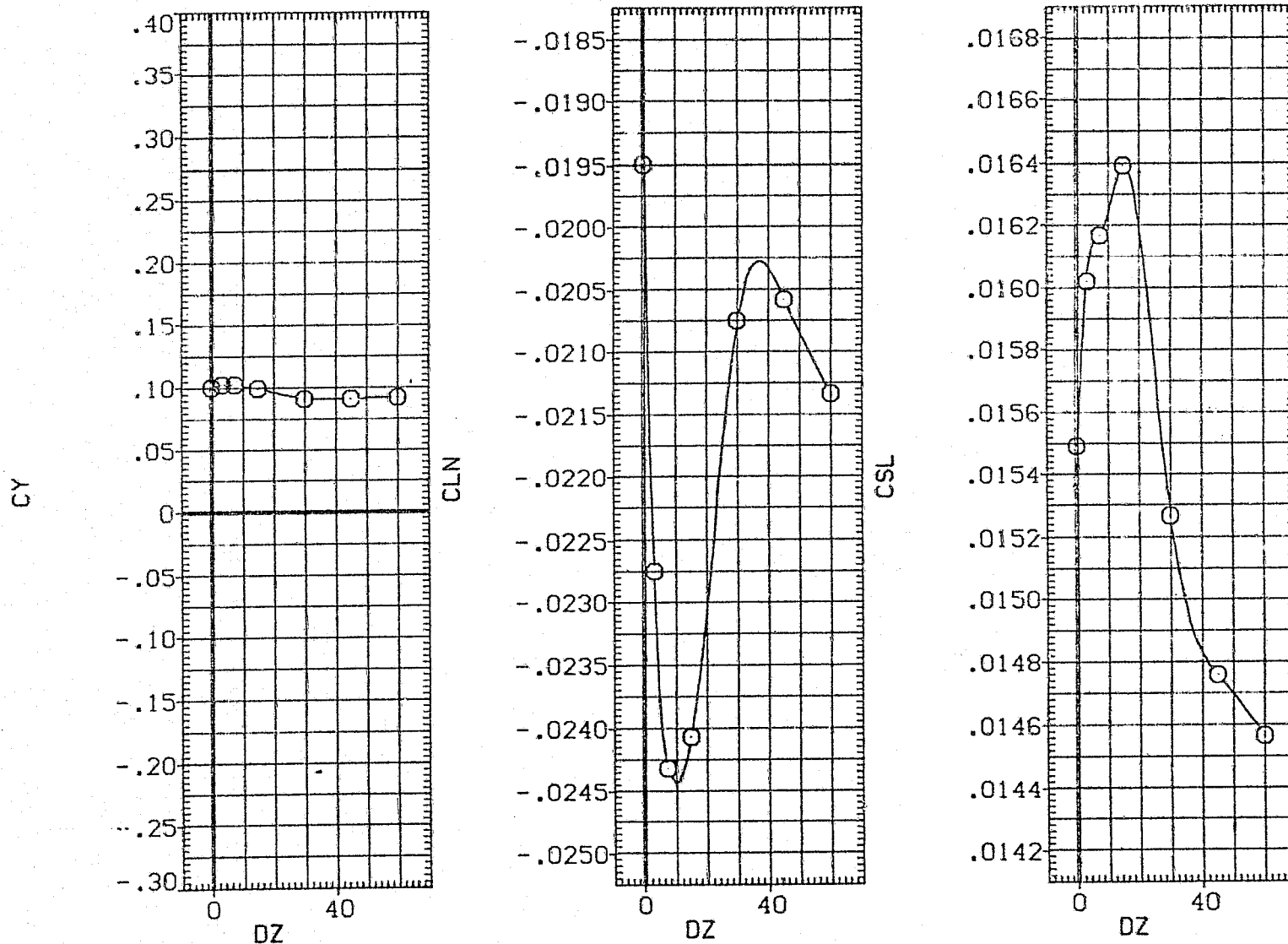


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (128 - 034) (UGN128)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

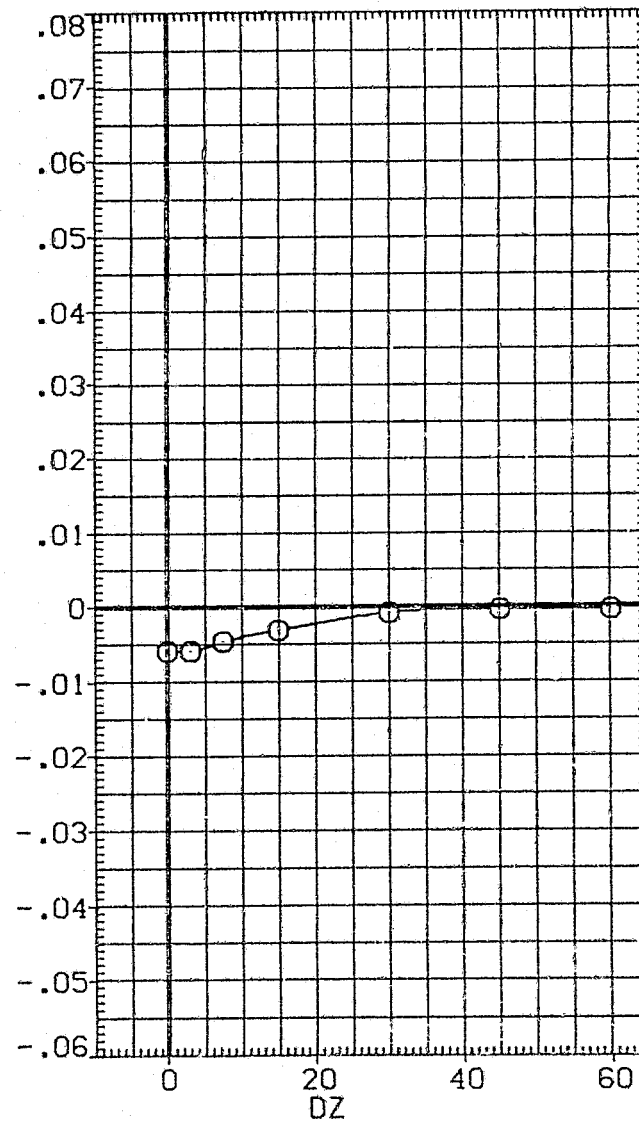
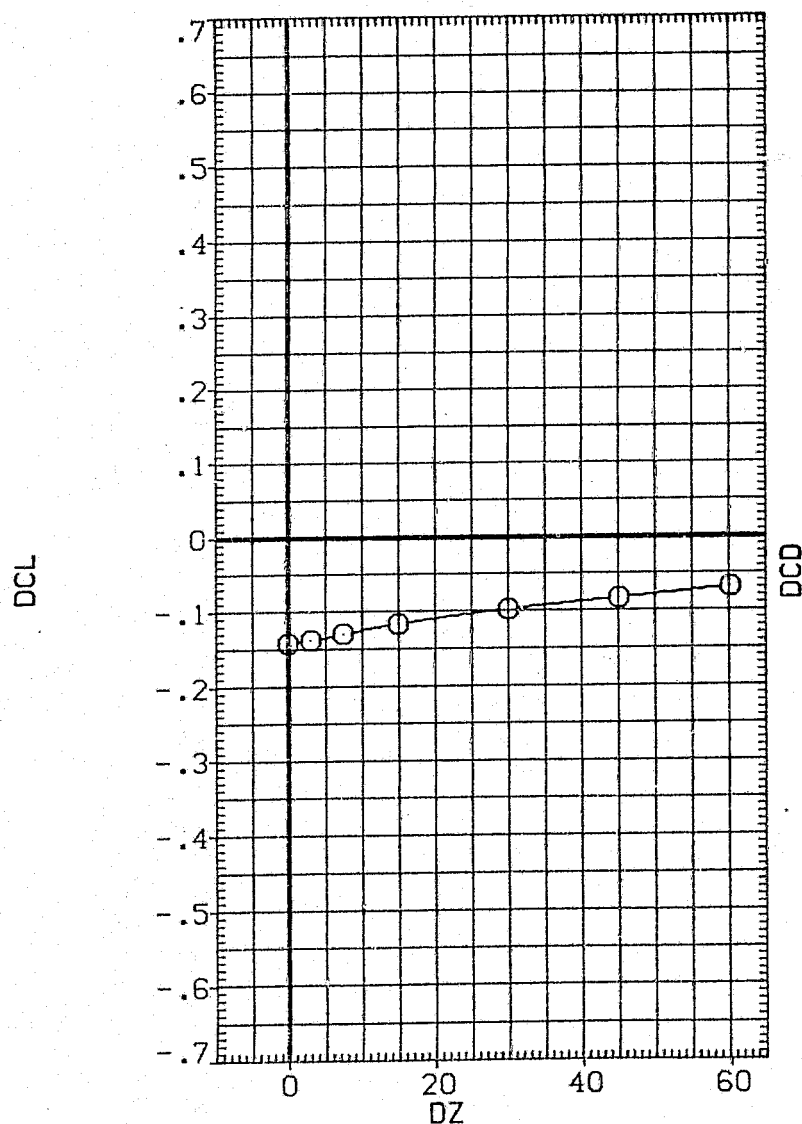


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL
O

ALPHA0
10.000

ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000 BETAC -5.000
.000 ELV-0B 3.000
5.000 MACH .600
.000 DX 20.000
.000 BETA0 .000

REFERENCE INFORMATION

SREF 5500.0000 50.FT.
LREF 327.7000 IN.
BREF 2248.0400 IN.
XMRP 1339.0000 IN.XC
YMRP .0000 IN.YC
ZMRP 190.8000 IN.ZC
SCALE .0300

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

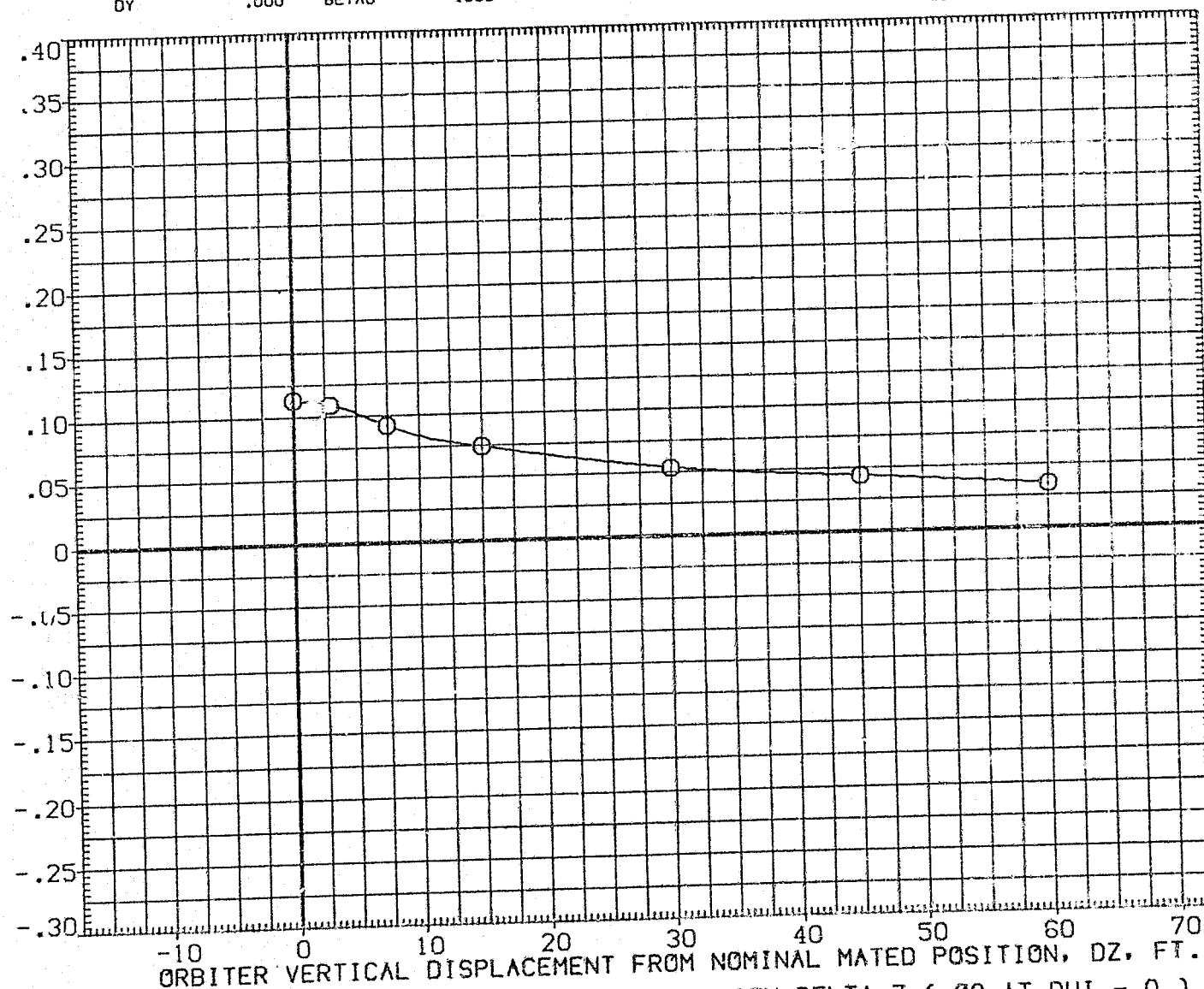


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (128 - 034)(UGN128)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

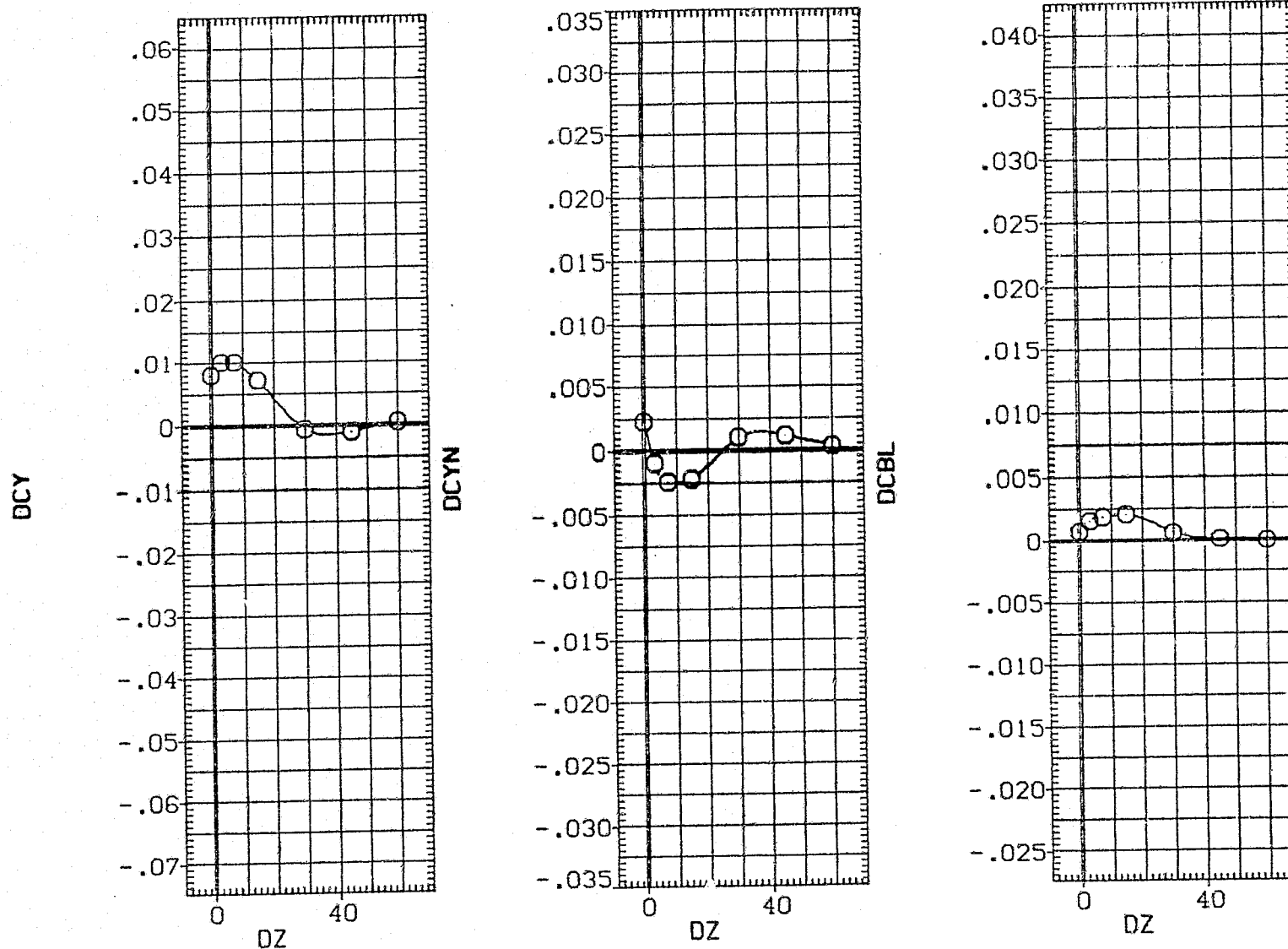


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
		ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 20.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	5500.0000	90.FT.
LREF	227.7600	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

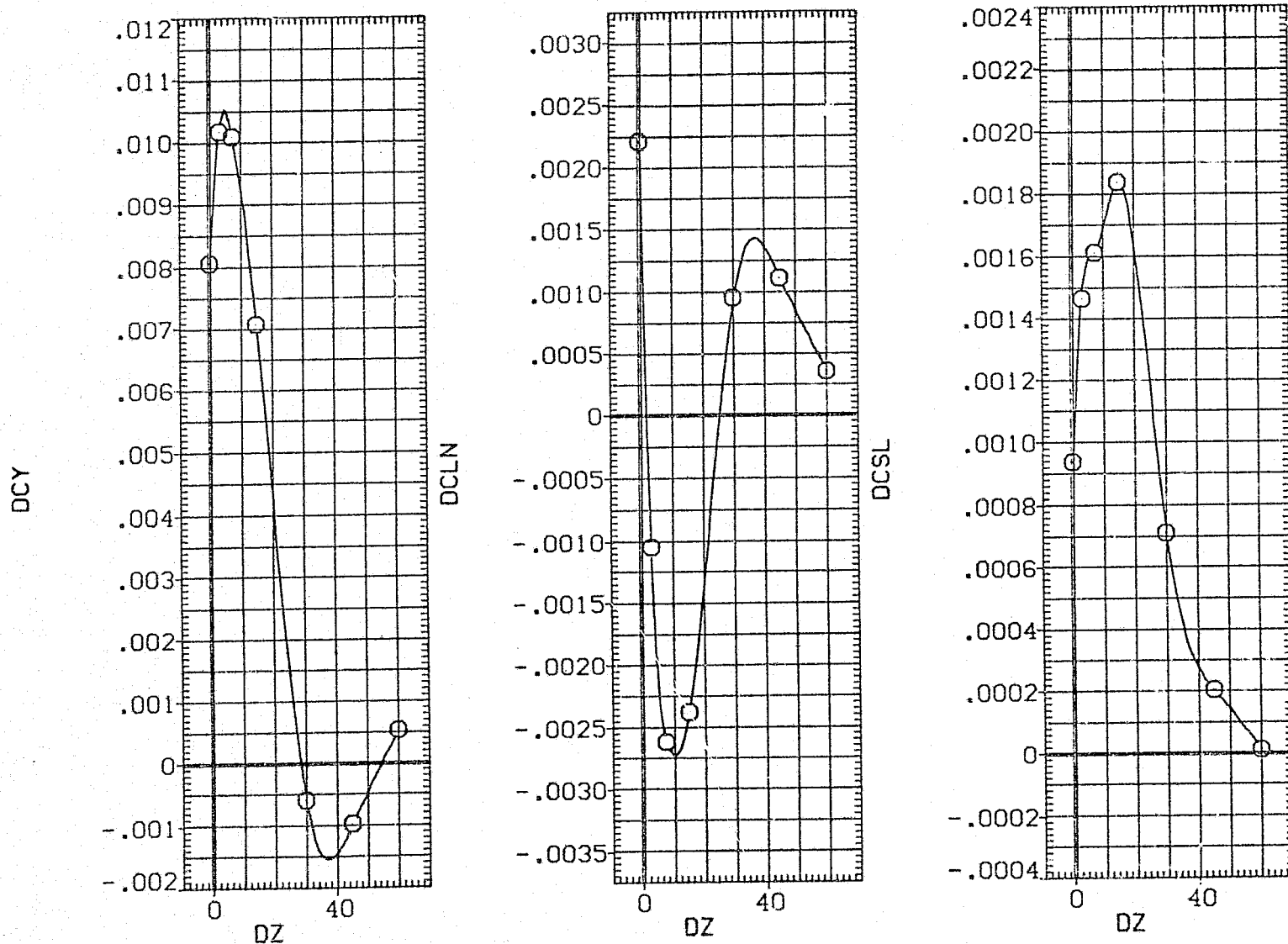


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA(MGN135)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

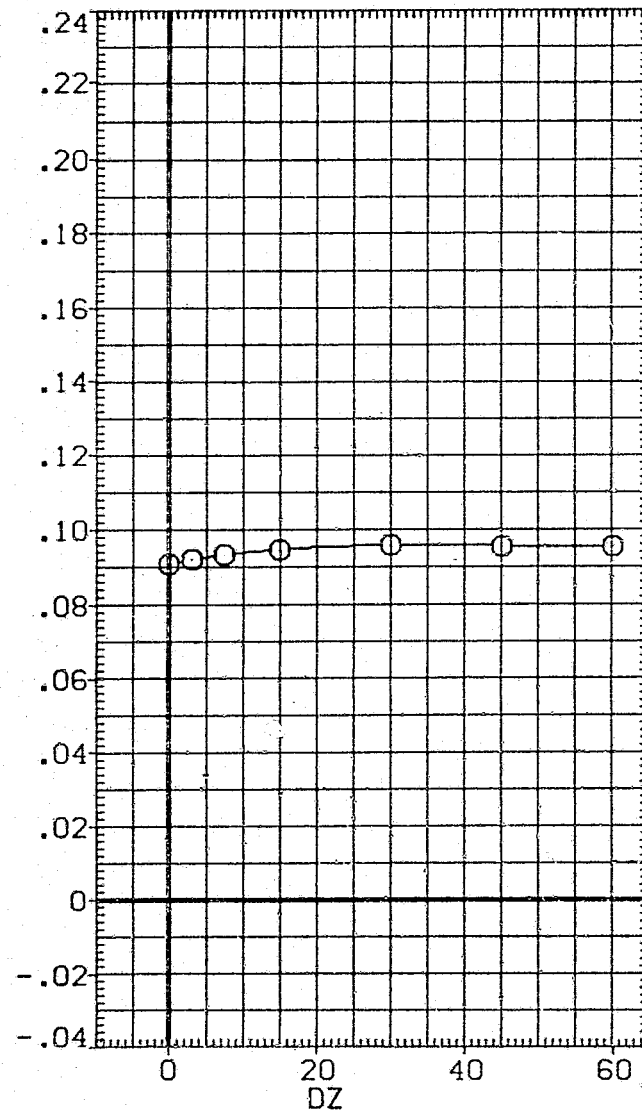
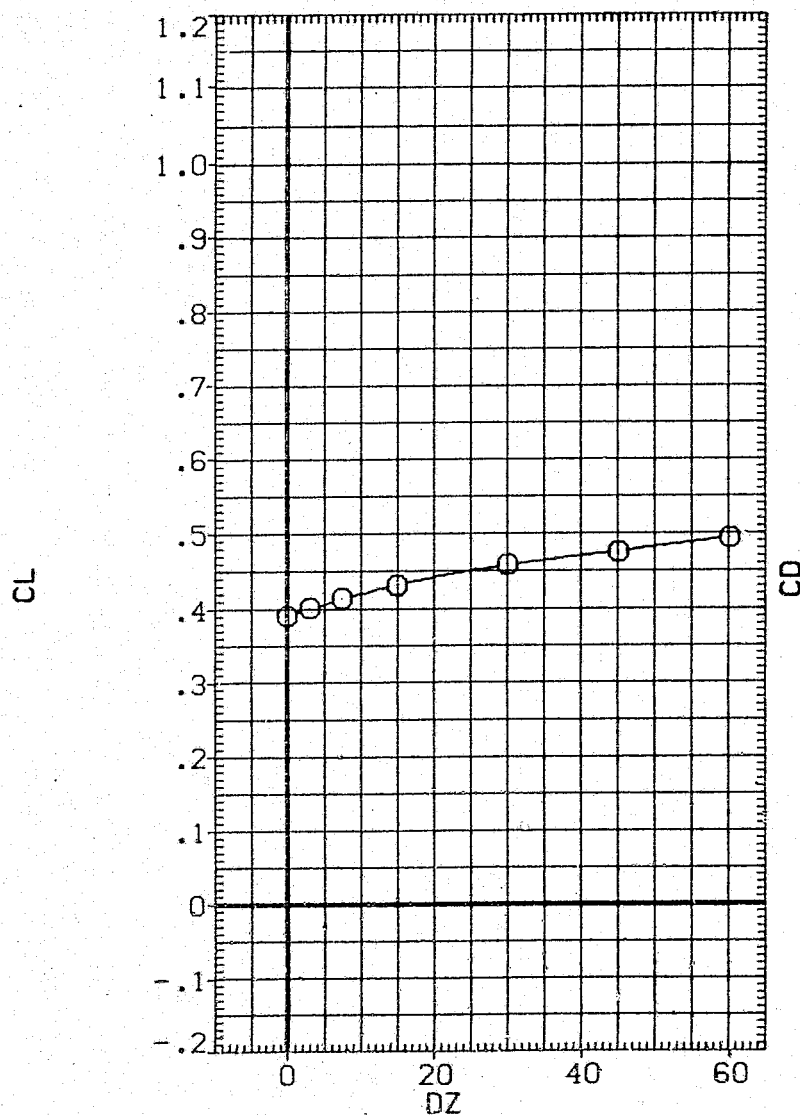


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN135)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7600	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

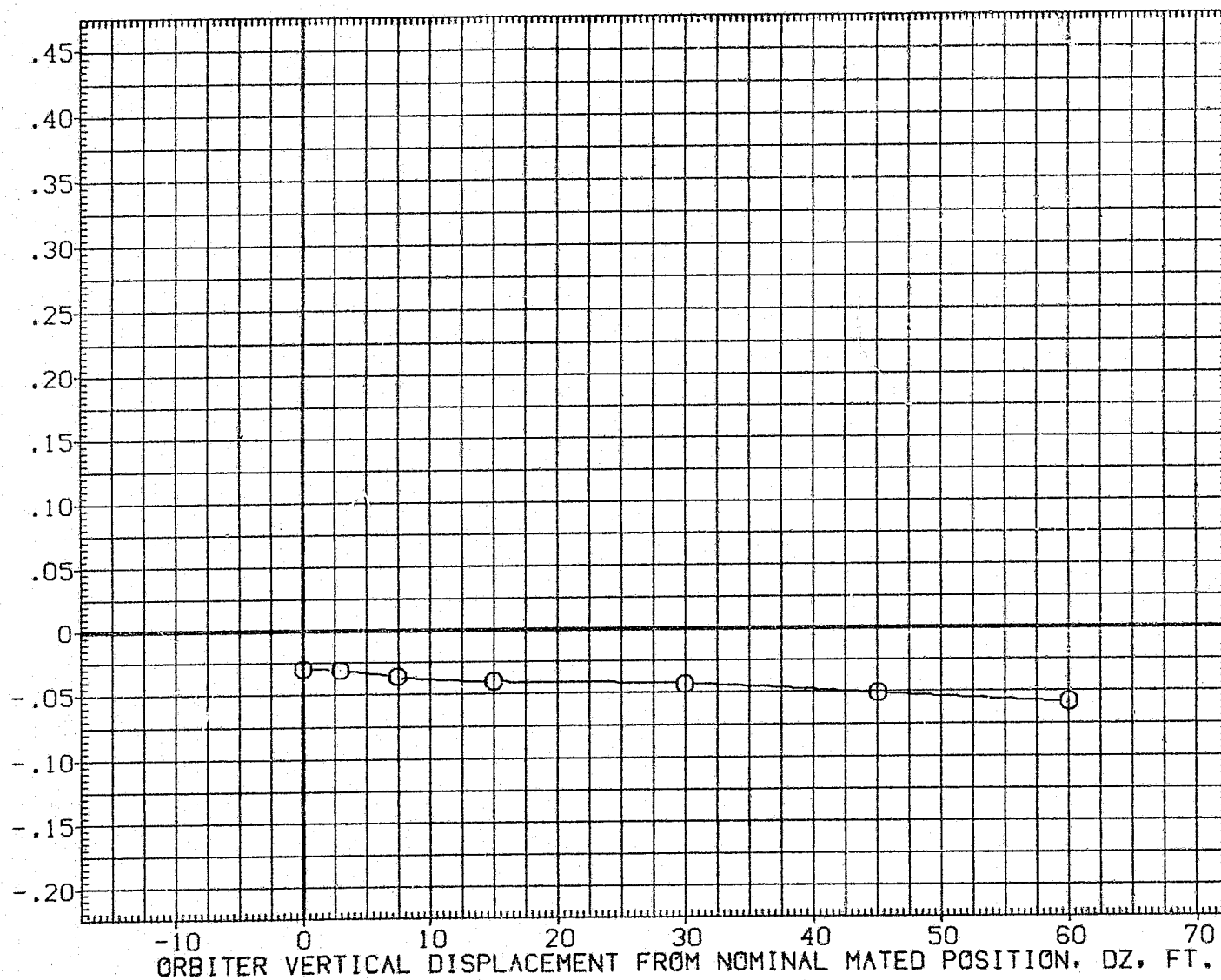


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN135)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC	
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	NACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

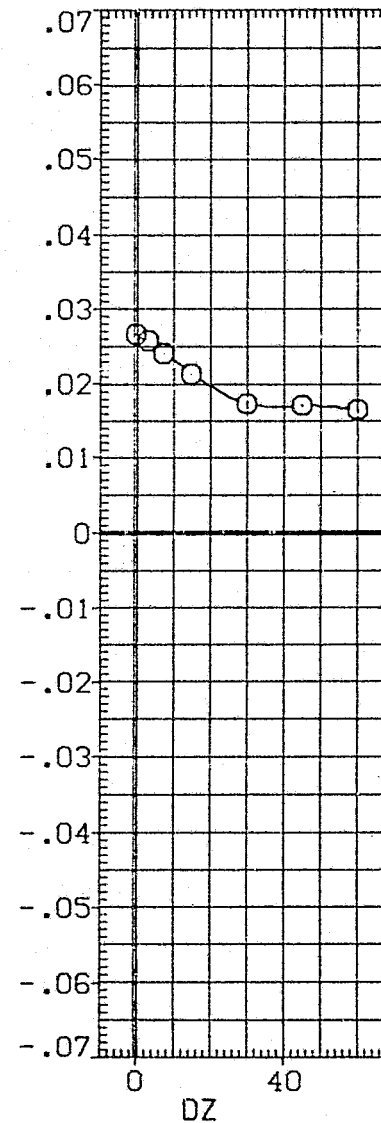
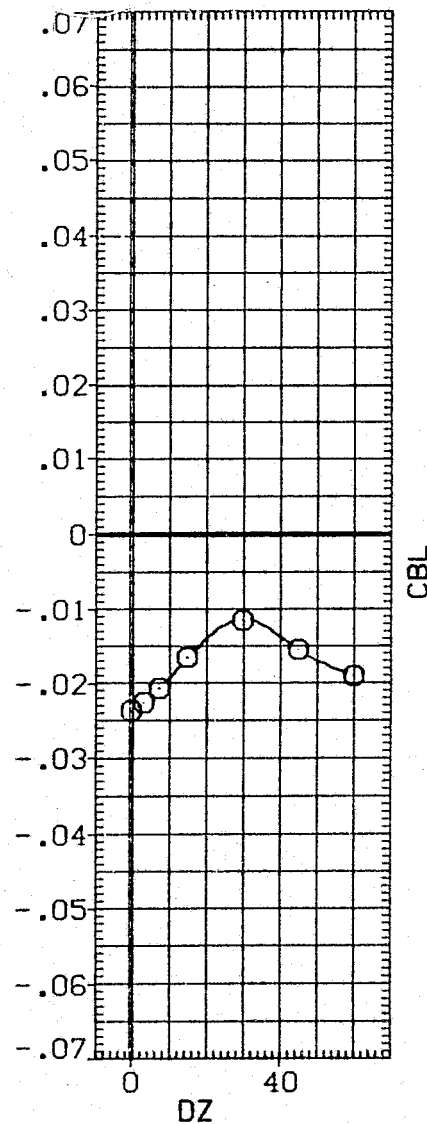
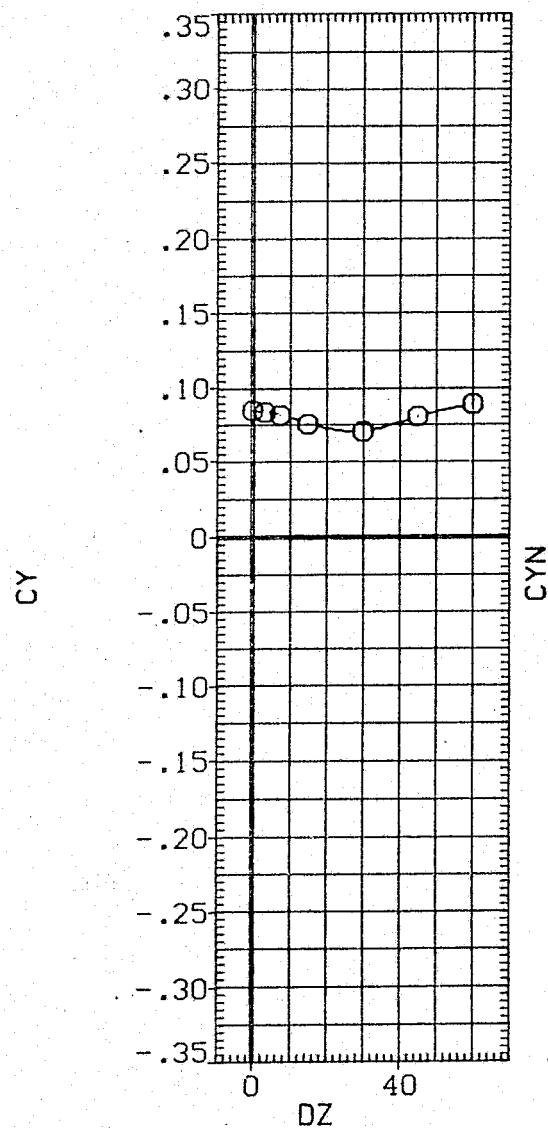


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (NON135)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	HACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

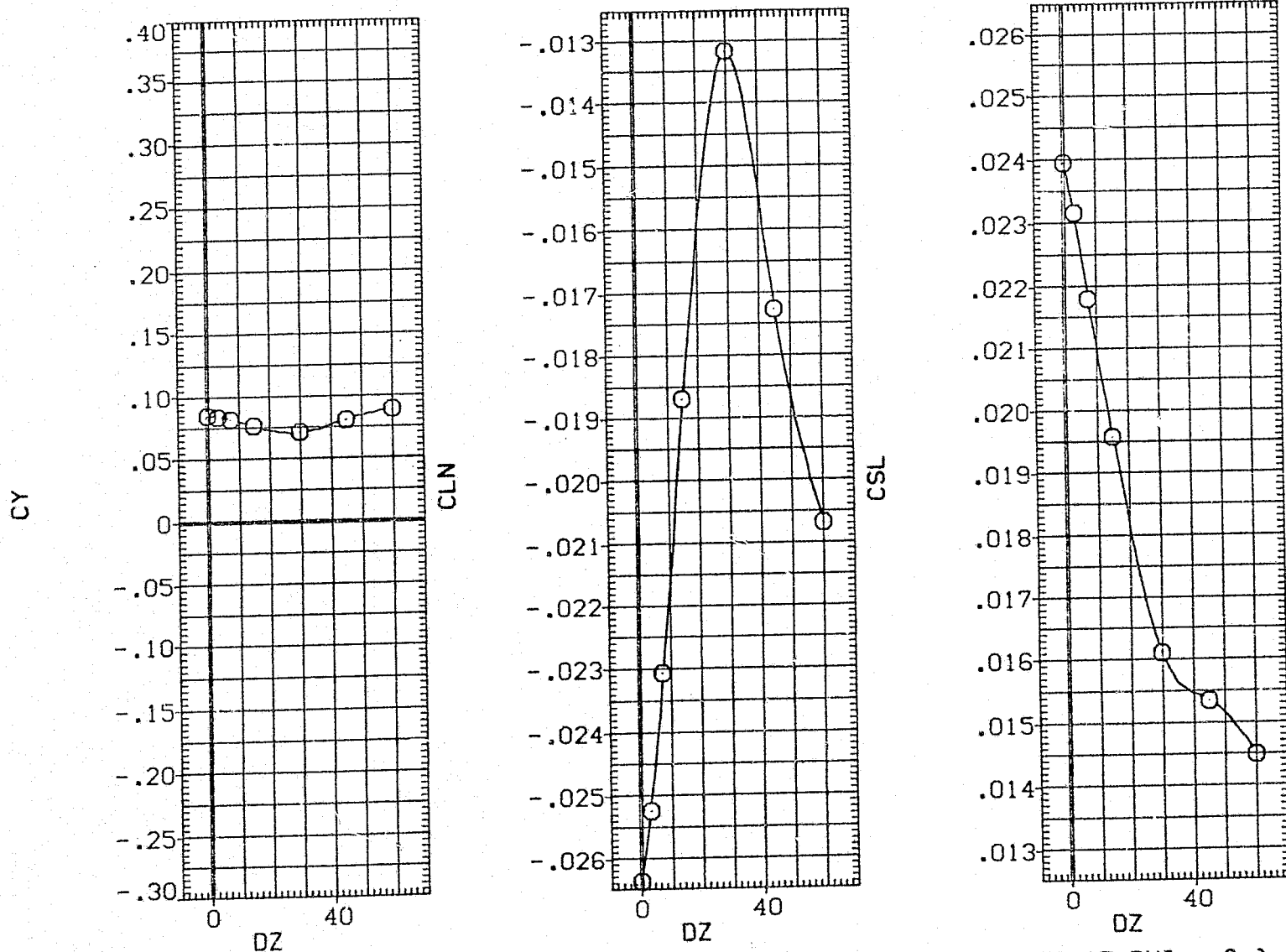


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (135 - 034) (UGN135)

SYMBOL
○ALPHA0
10.000

PARAMETRIC VALUES

ALPHA0	4.000	BETA0	-5.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	10.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

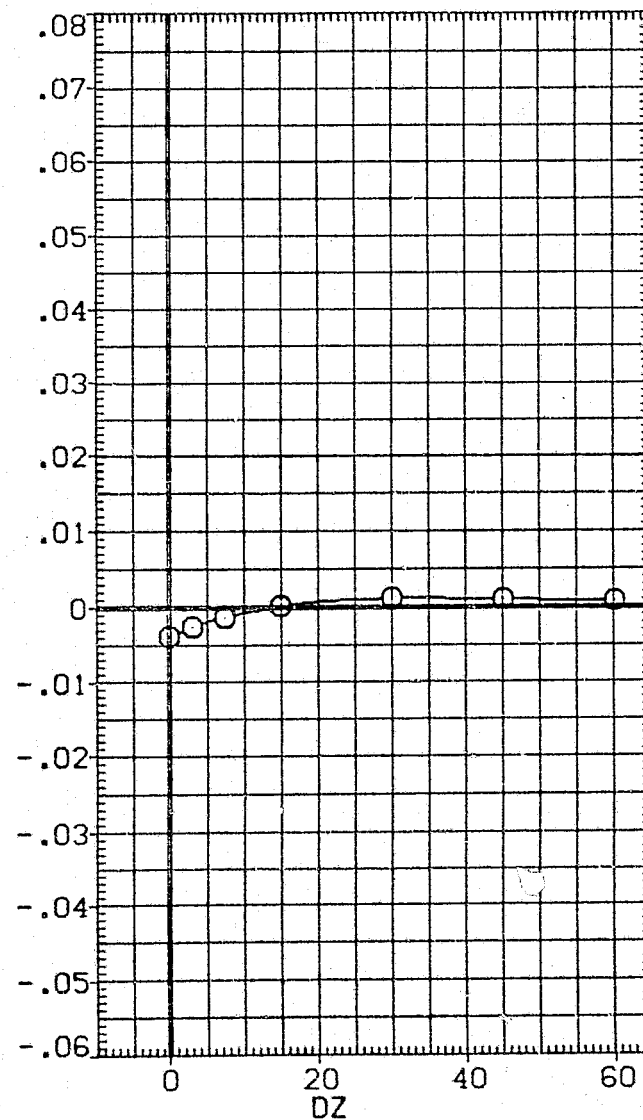
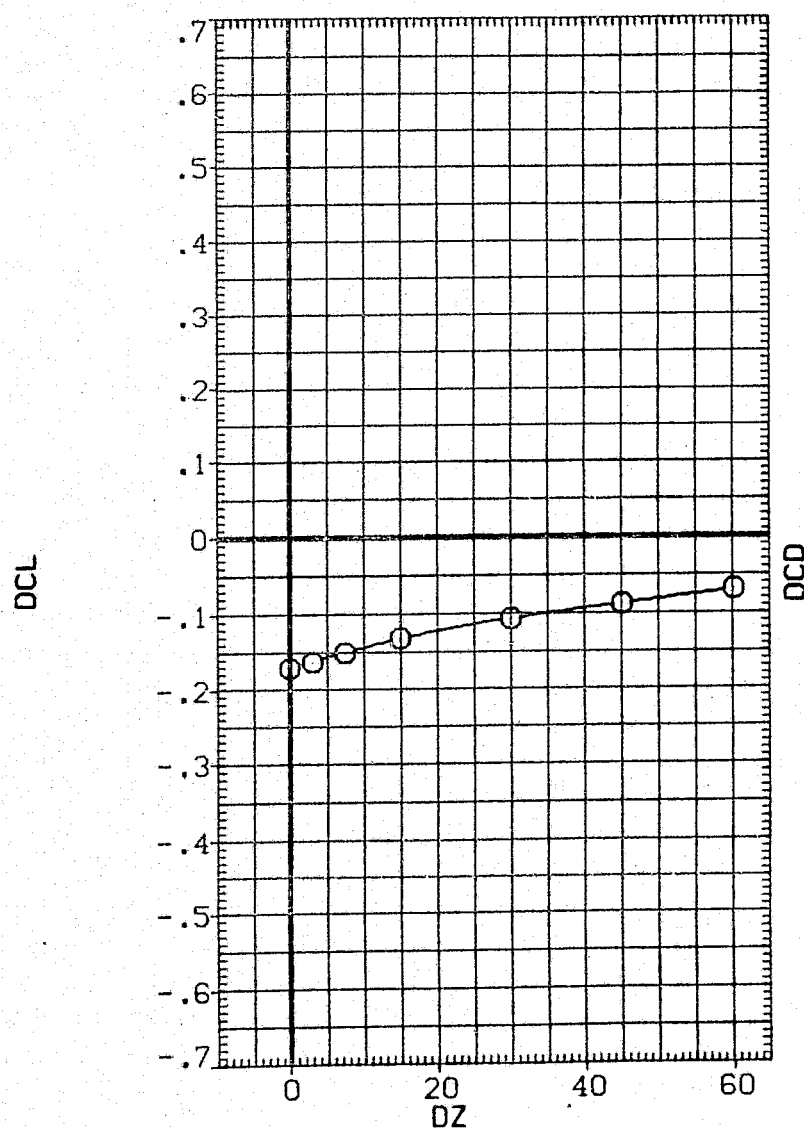


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (135 - 034) (UGN135)

SYMBOL
○

ALPHA0
10.000

ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000 BETAC -5.000
.000 ELV-0B 3.000
5.000 MACH .600
.000 DX .000
10.000 BETA0 .000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.7800 IN.
BREF 2348.0400 IN.
XMRP 1339.9000 IN.XC
YMRP .0000 IN.YC
ZMRP 190.8000 IN.ZC
SCALE .0300

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

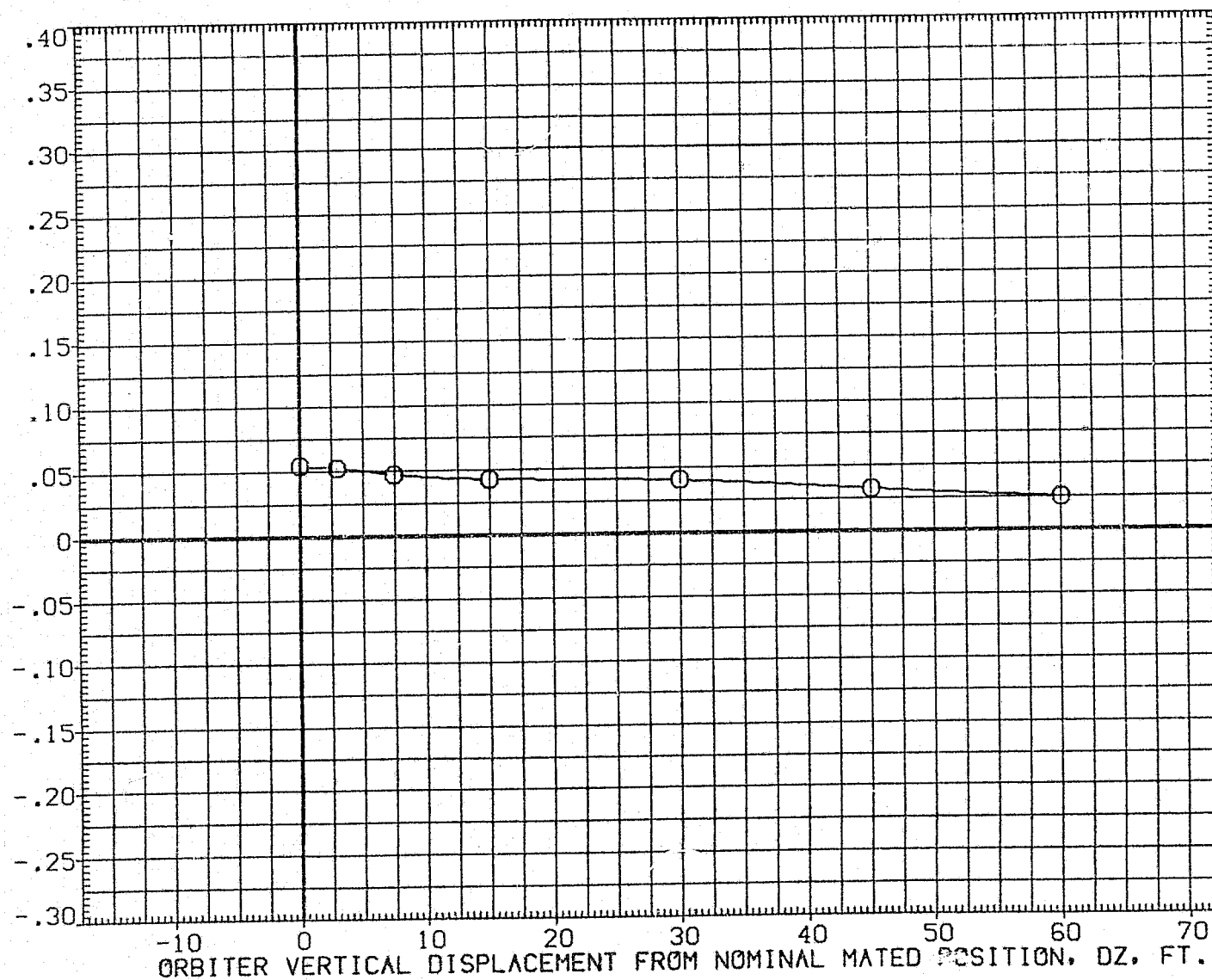


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (135 - 034) (UGN135)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7600	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

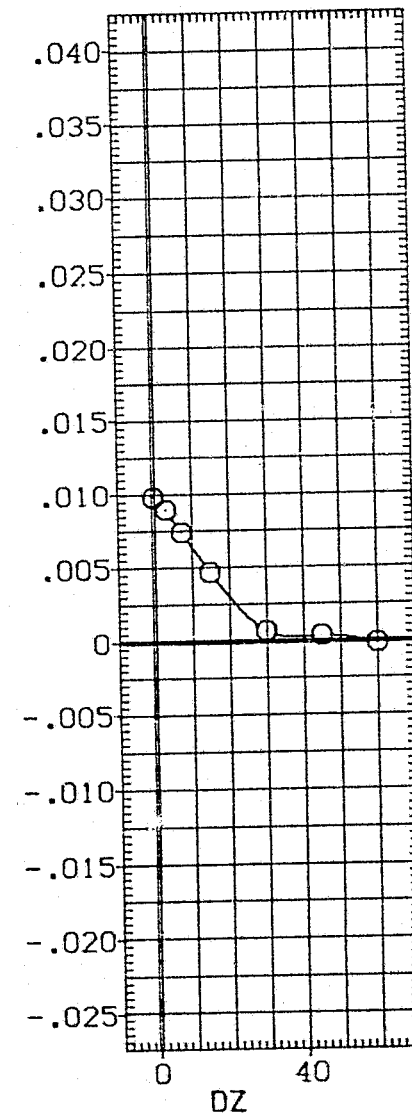
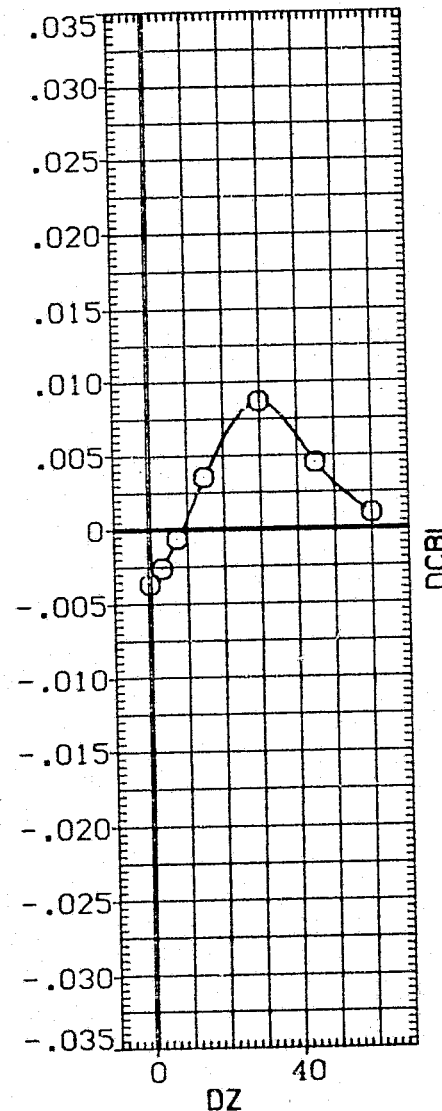
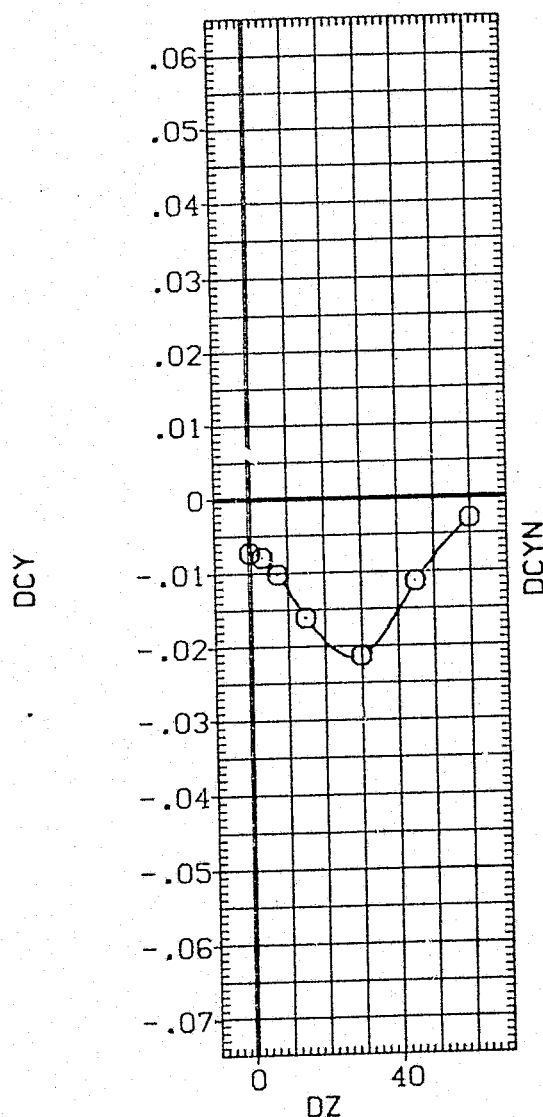


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
		ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY 10.000 BETA0 .200

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

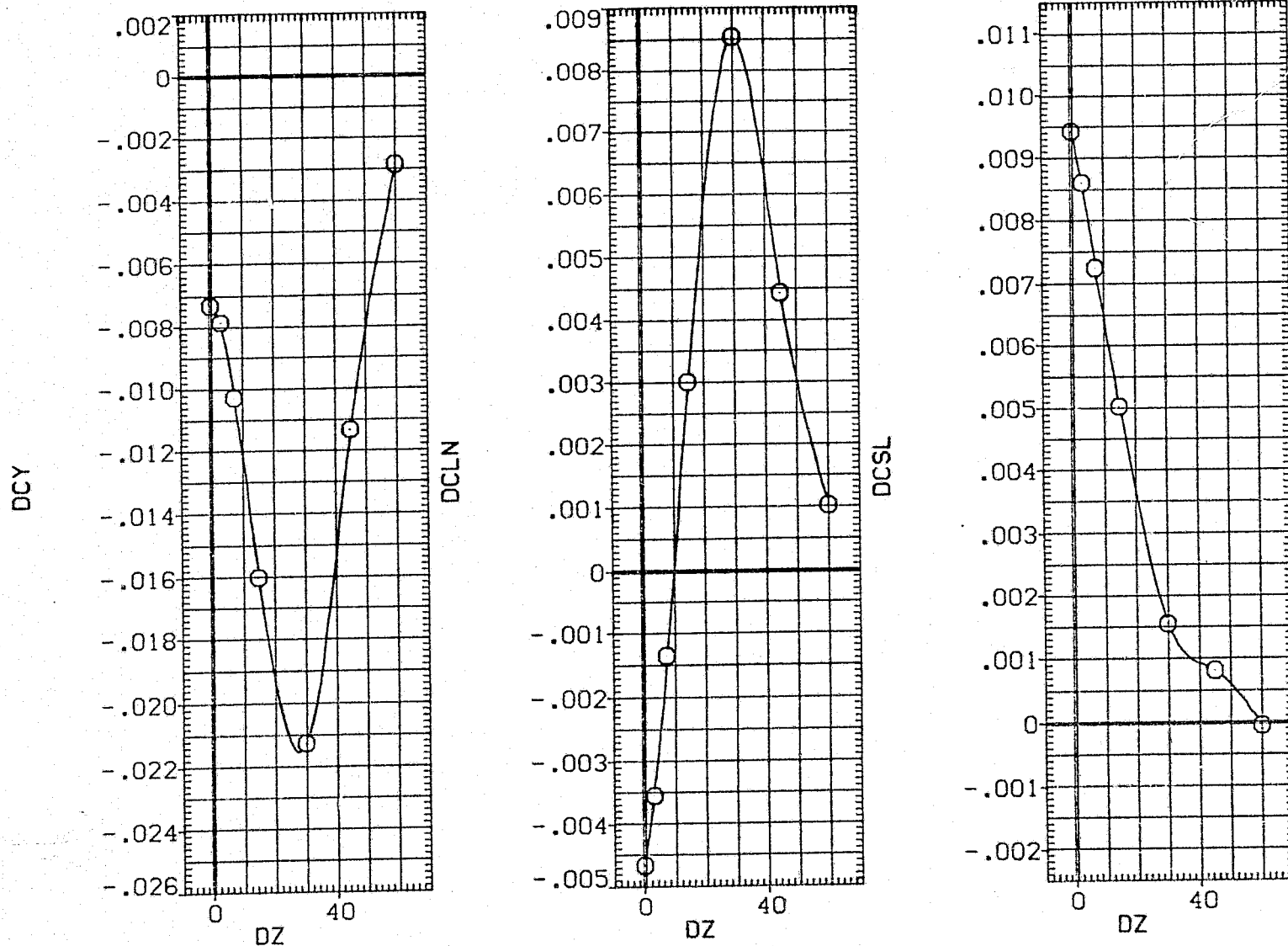


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN136)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.500
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

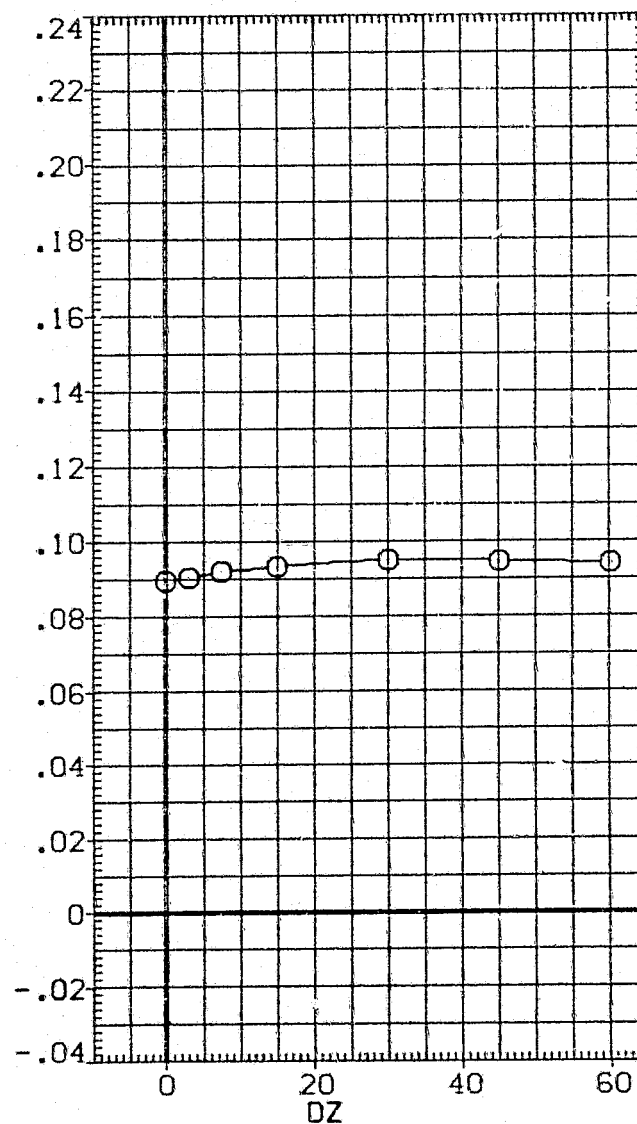
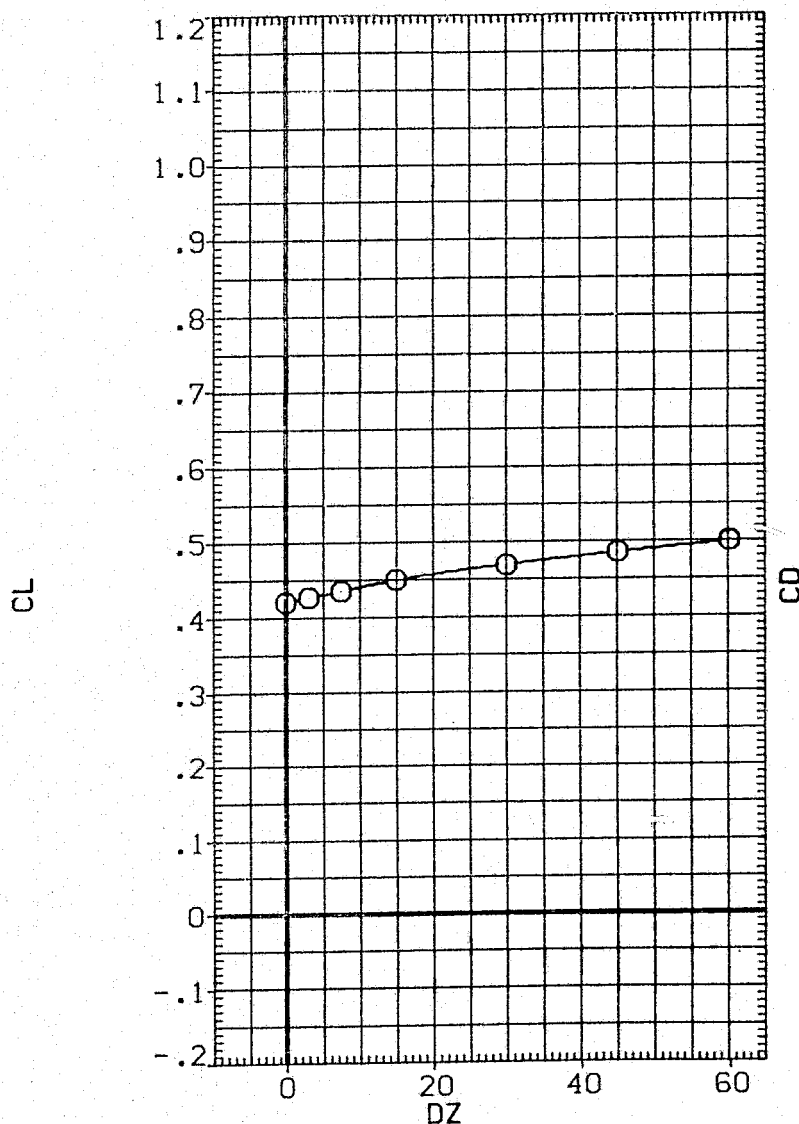


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
O	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

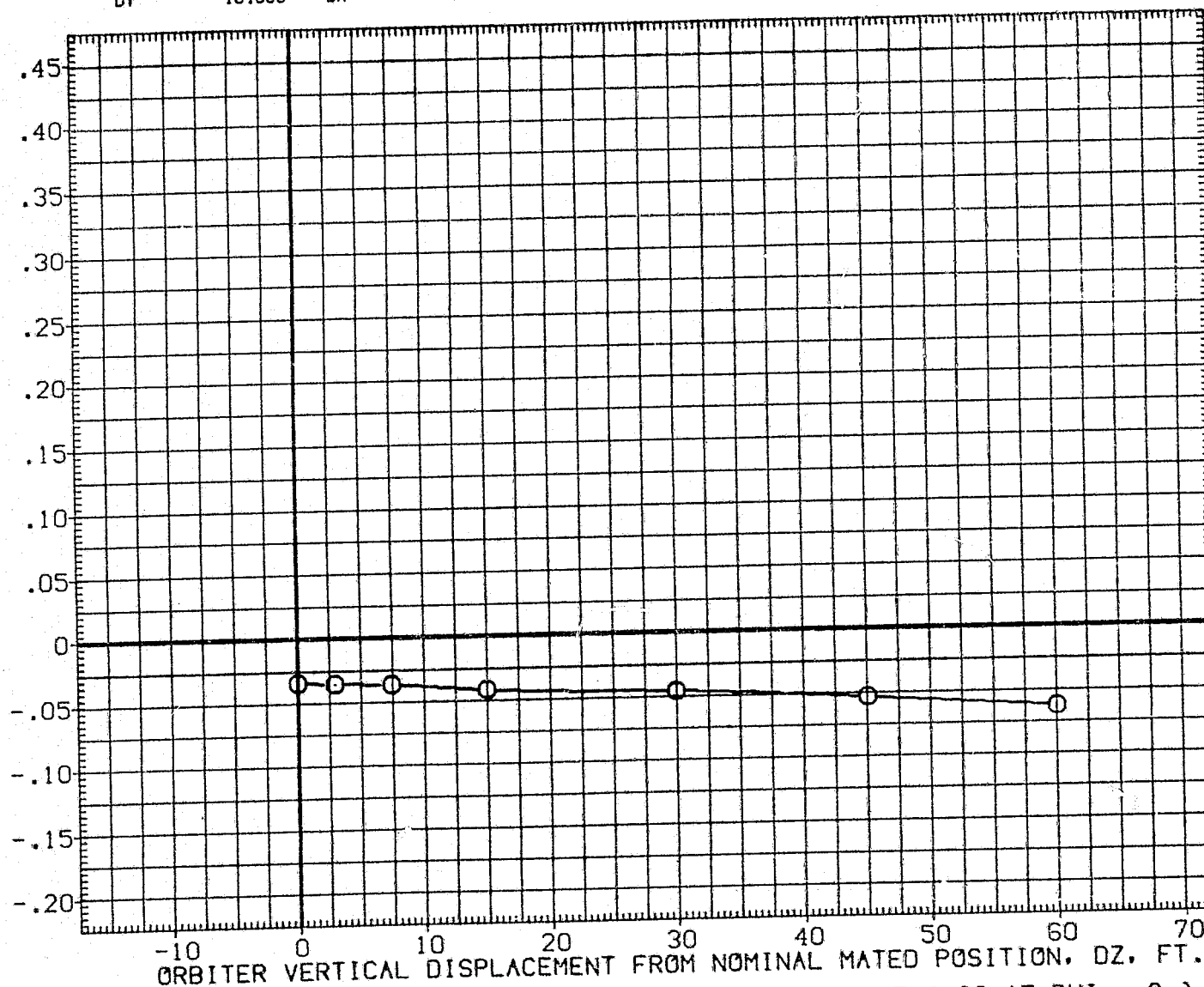


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN136)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		OY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

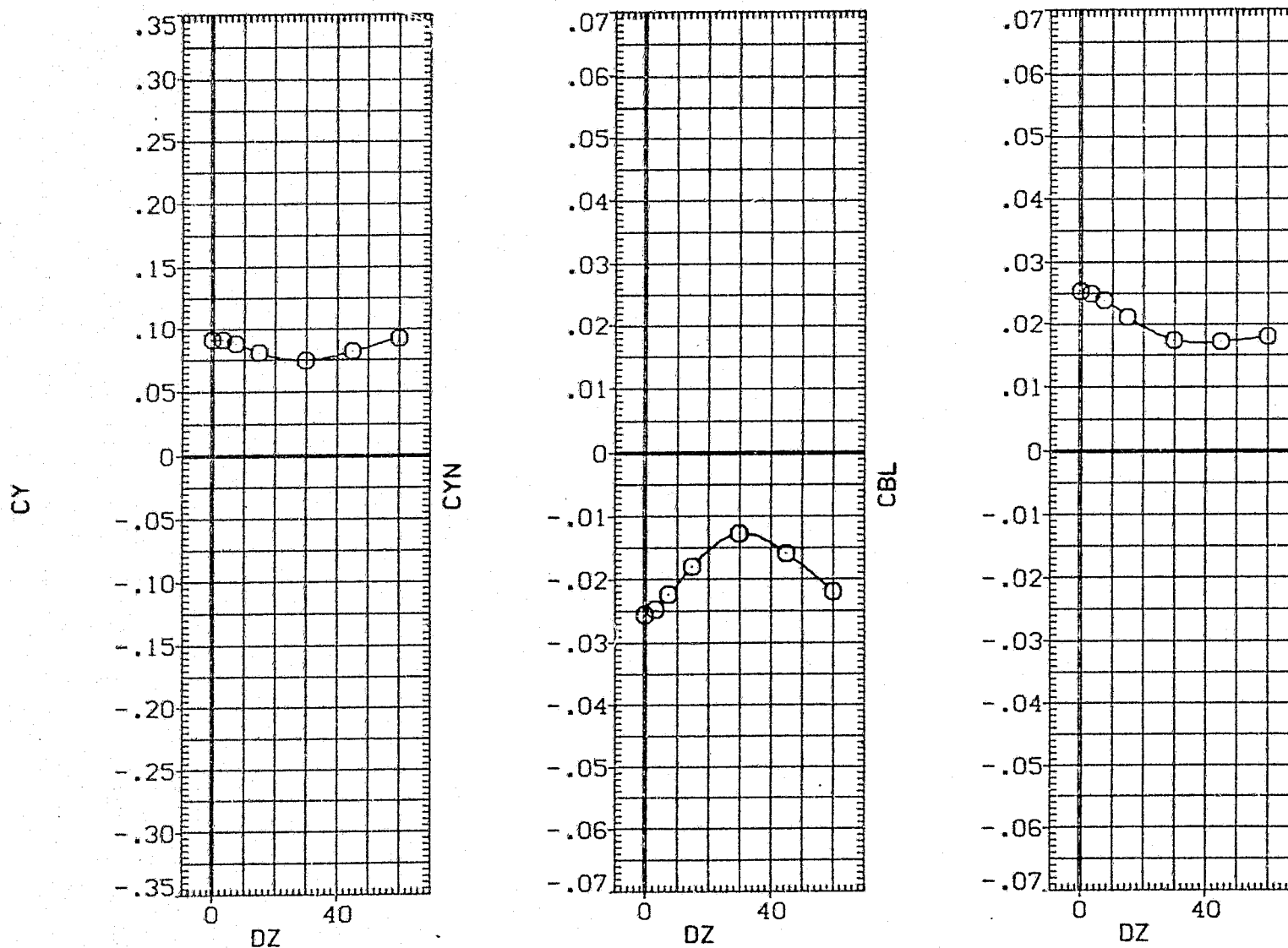


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 4.000	BETAC -5.000
		ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		BETA0 .000	PHI .000
		DY 10.000	DX 10.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

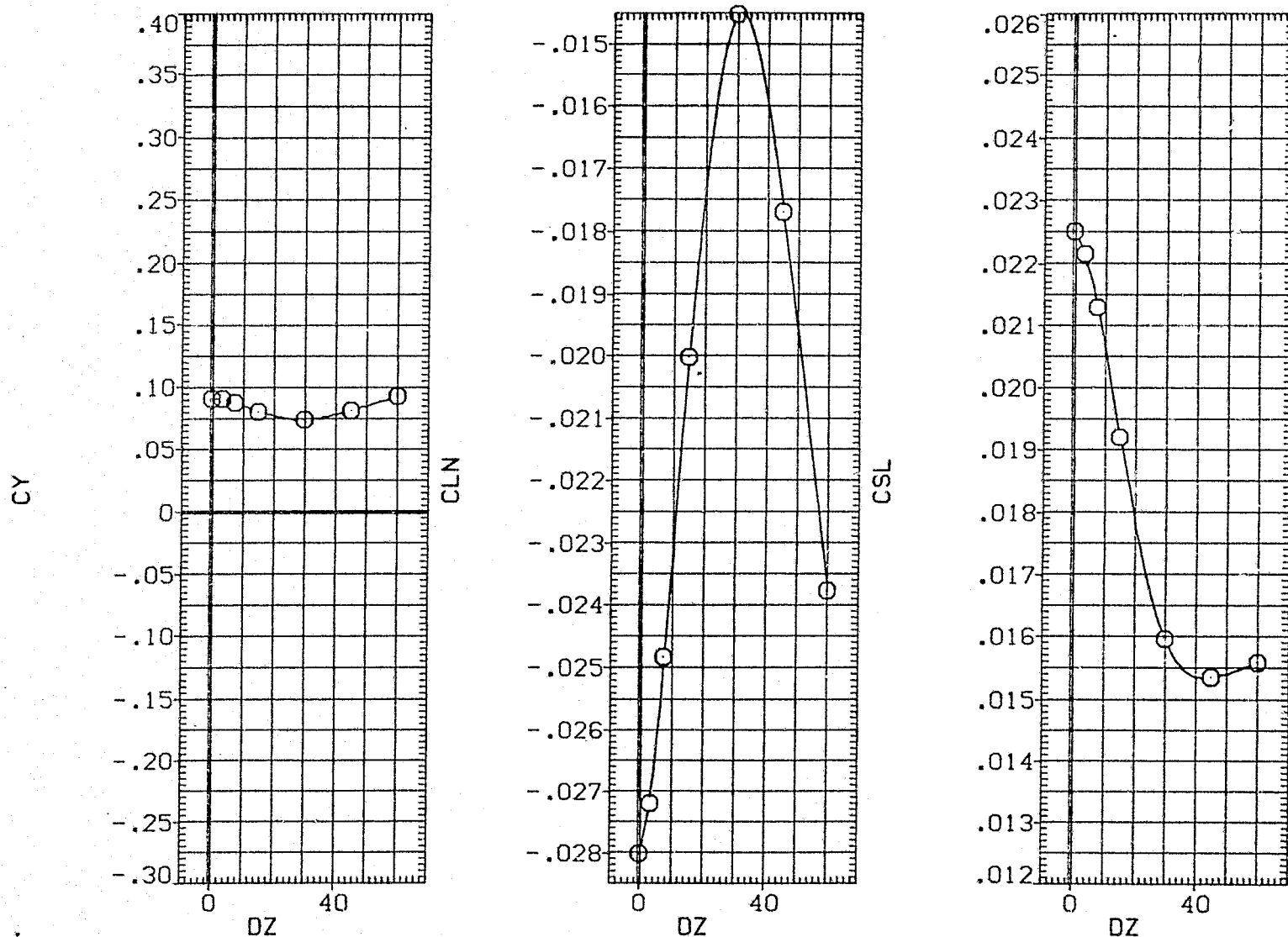


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (136 - 034)(UGN136)

SYMBOL

○

ALPHA0

10.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

-5.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

10.000

DY

10.000

BETA0

.000

REFERENCE INFORMATION

SREF 5500.0000

50.FT.

LREF 327.7800

IN.

BREF 2348.0400

IN.

XMRP 1339.9000

IN.XC

YMRP .0000

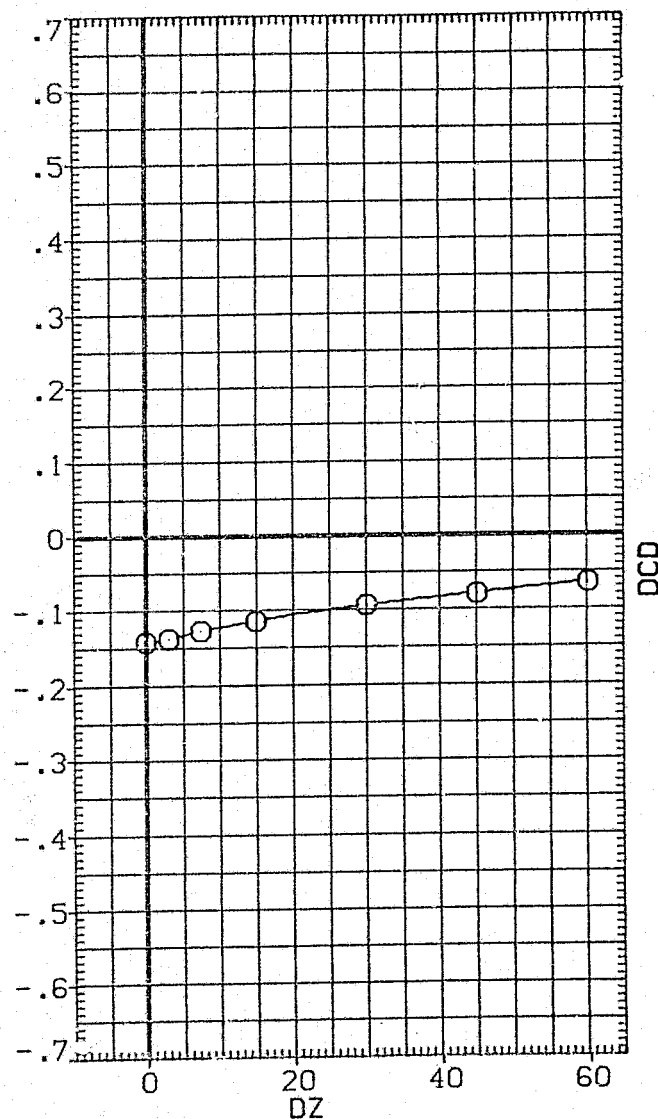
IN.YC

ZMRP 190.8000

IN.ZC

SCALE .0300

DCL



DCD

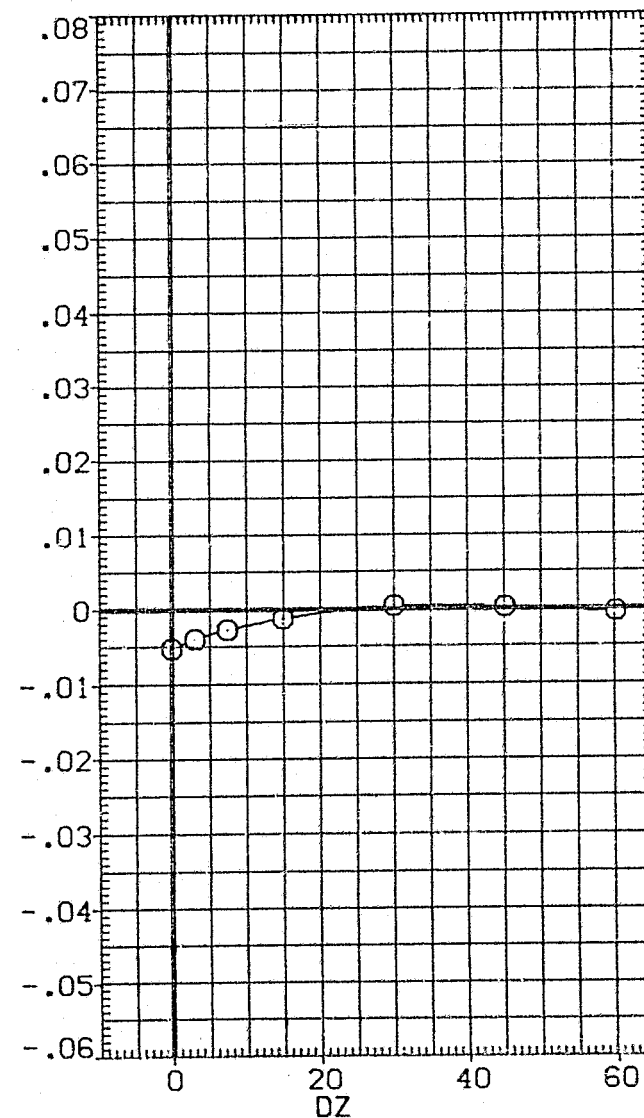


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL

○

ALPHA0

10.070

PARAMETRIC VALUES

ALPHA0

4.000

BETAC

-5.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

10.000

DY

10.000

BETA0

.000

REFERENCE INFORMATION

SREF

5500.0000

50.FT.

LREF

327.7800

IN.

BREF

2348.0400

IN.

XMRP

1339.9000

IN.XC

YMRP

.0000

IN.YC

ZMRP

190.8000

IN.ZC

SCALE

.0300

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

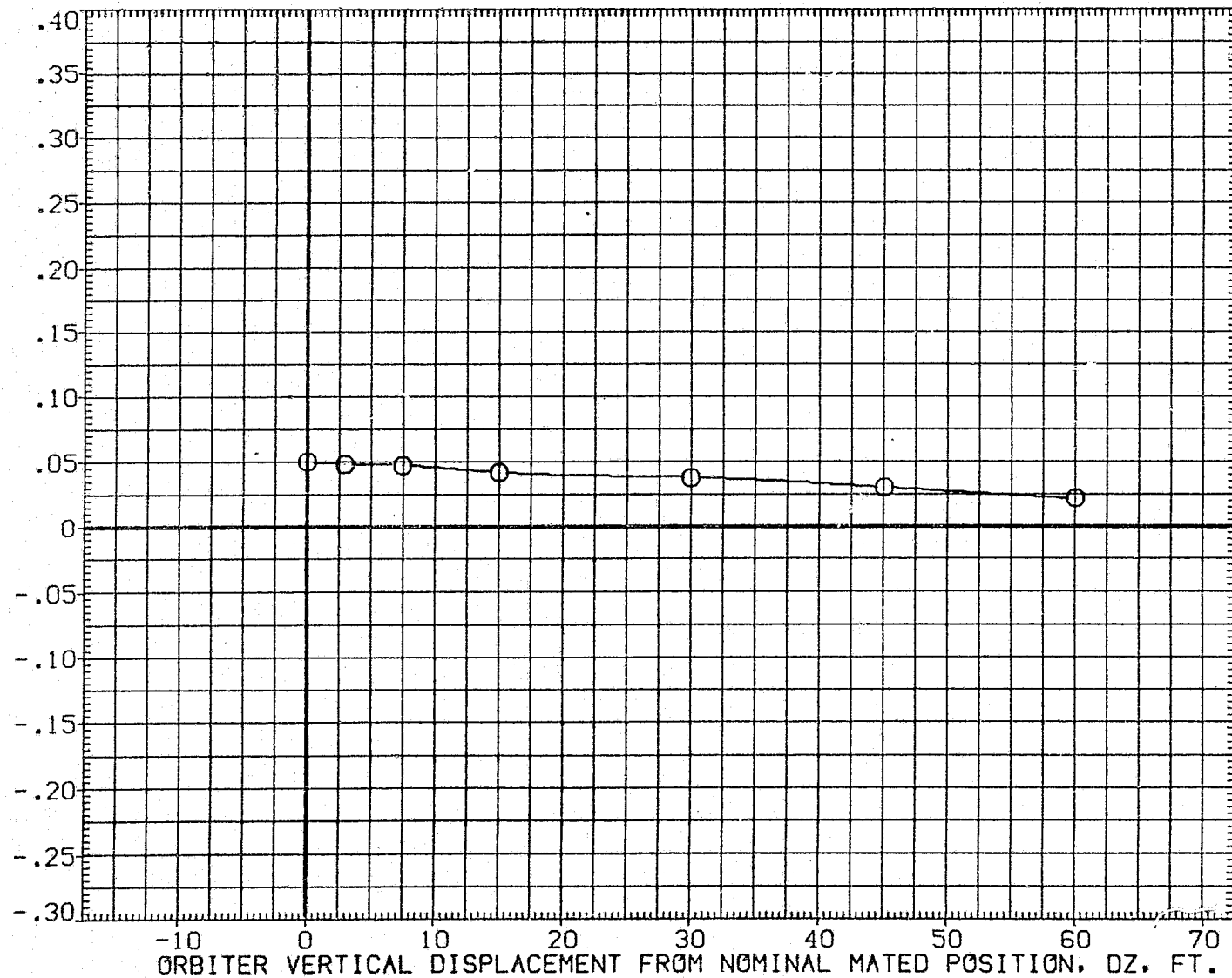


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (136 - 034)(UGN136)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

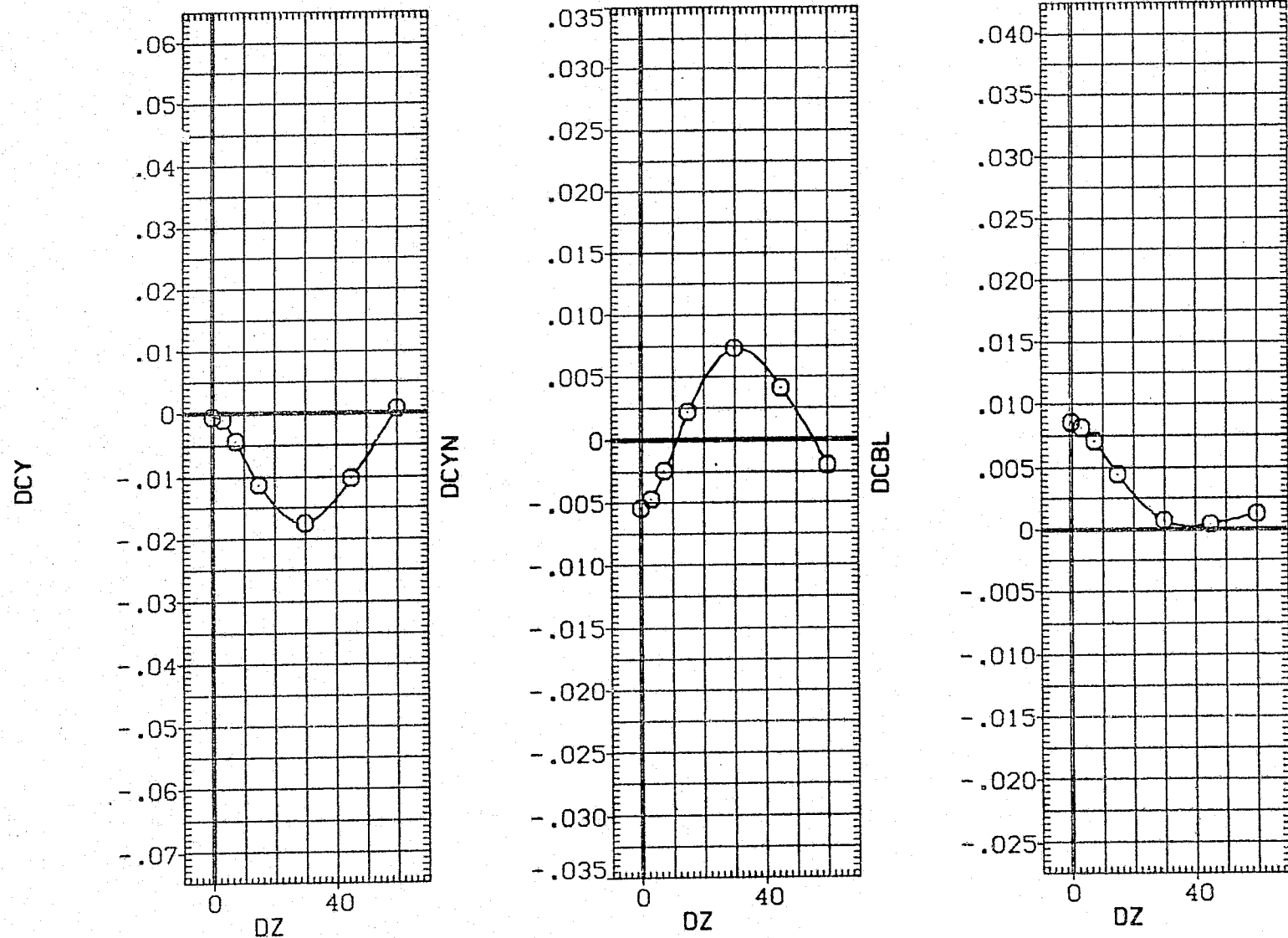


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC -5.000
		ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY 10.000 BETA0 .000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

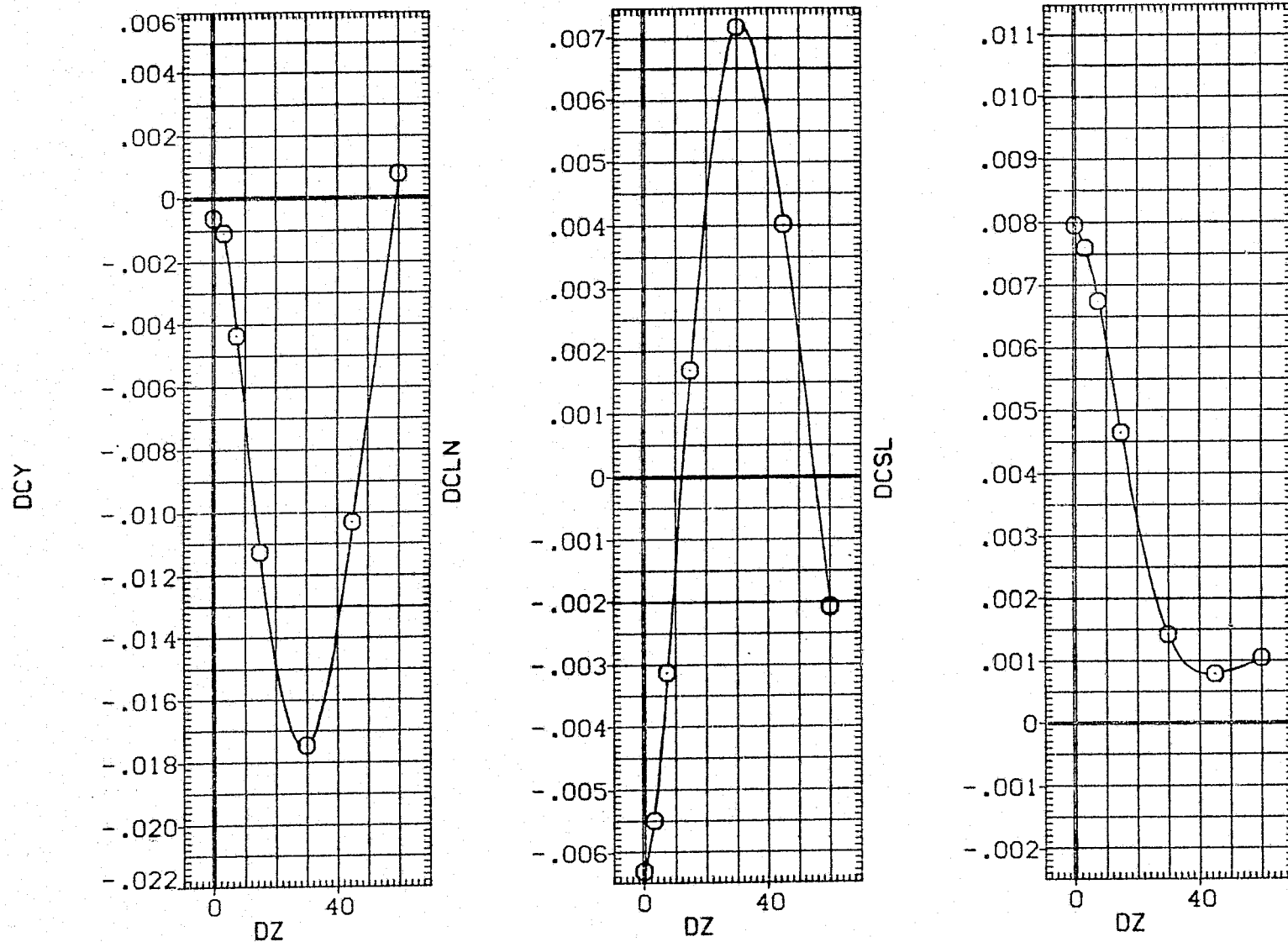


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN129)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	BETAC	.000	ELV-IB	.000	
○	14.000	ELV-OB	3.000	ELEVON	5.000	
□		MACH	.600	BETAC	.000	
		PHI	.000	DY	.000	
		OX	.000	ALPHAC	4.000	

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

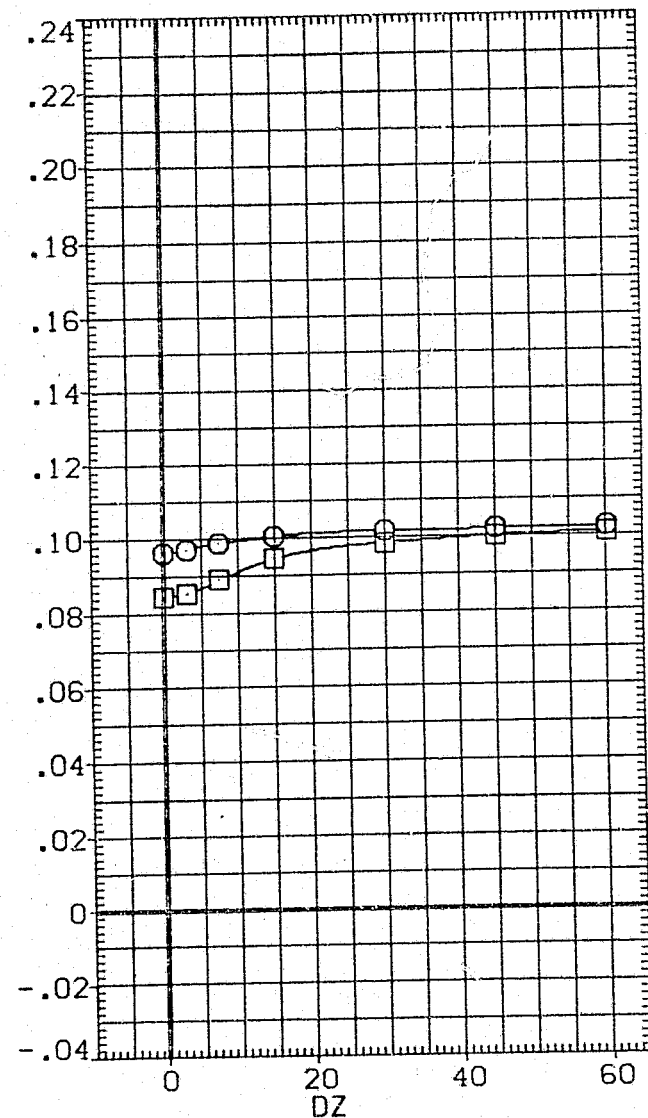
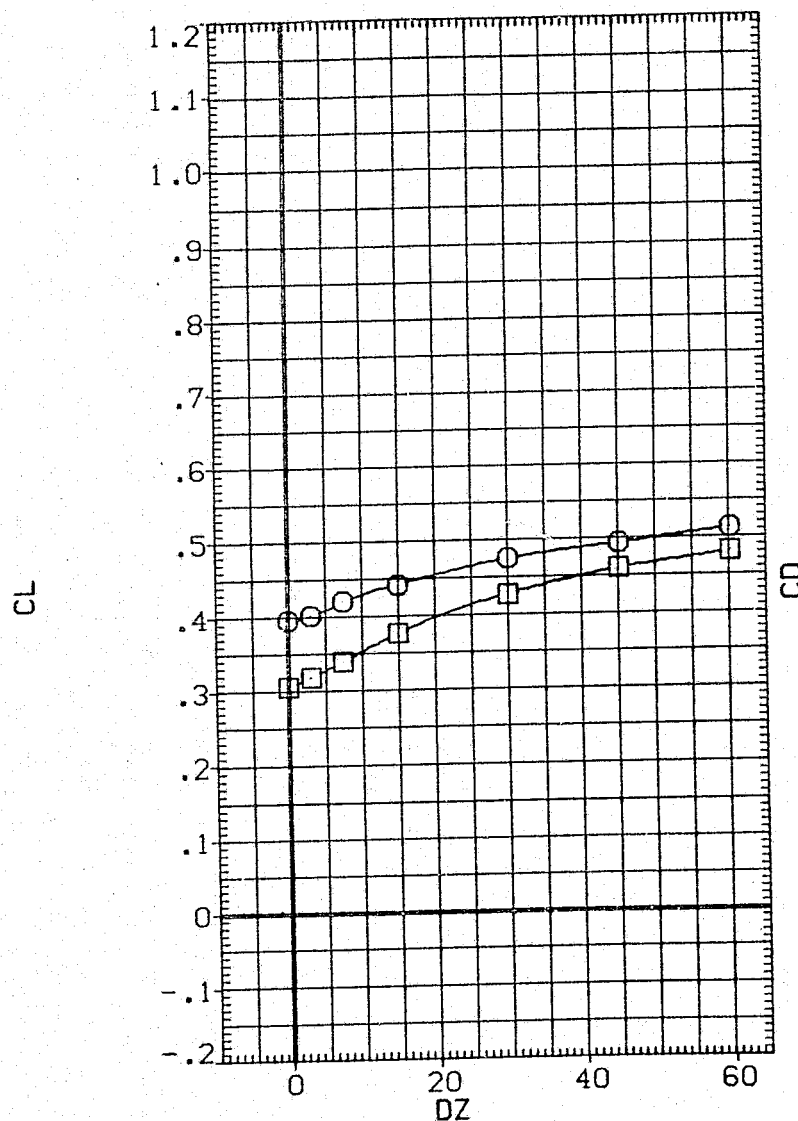


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN129)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-1B	ELV-0B
○	10.000	.000	.000	.000	.000
□	14.000	.000	3.000	5.000	.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

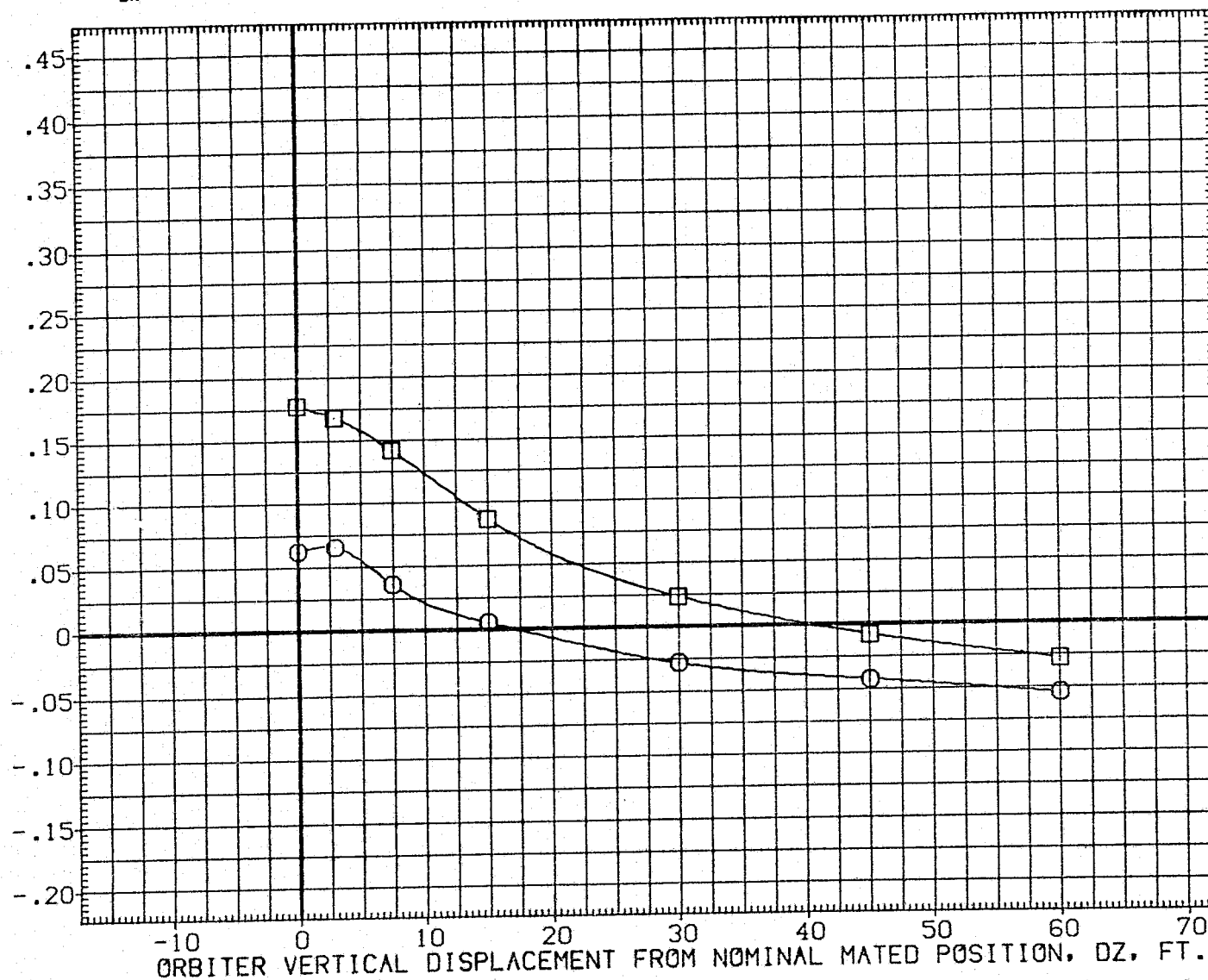


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN129)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	10.000		.000	ELV-IB .000
□	14.000	ELV-OB	3.000	ELEVON 5.000
		MACH	.600	BETA0 .000
		PHI	.000	DY .000
		DX	.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

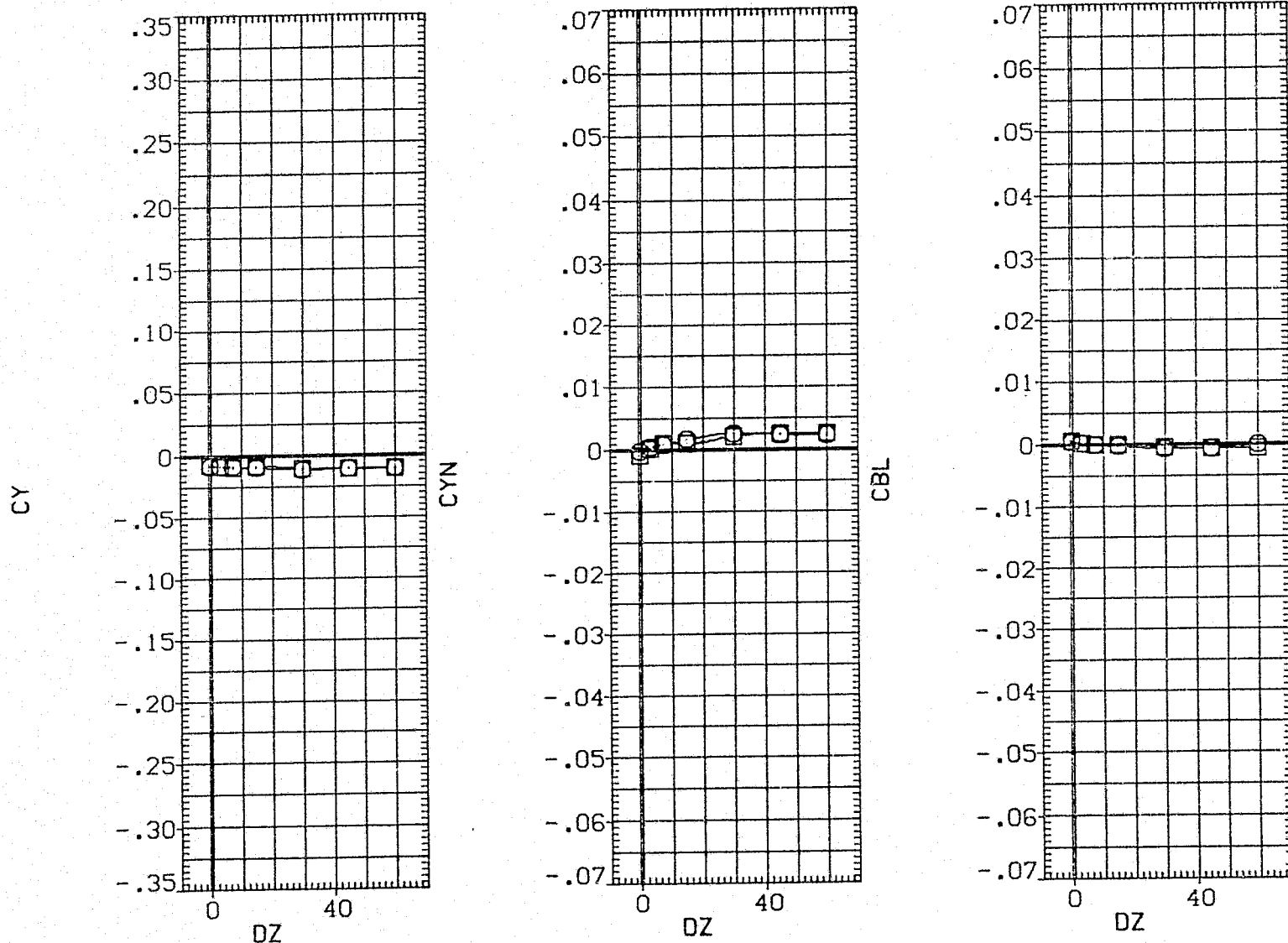


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN129)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	10.000		.000	ELV-1B .000
□	14.000	ELV-0B 3.000	ELEVON 5.000	
		MACH .600	BETA0 .000	
		PHI .000	DY .000	
		DX .000	ALPHAC 4.000	

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

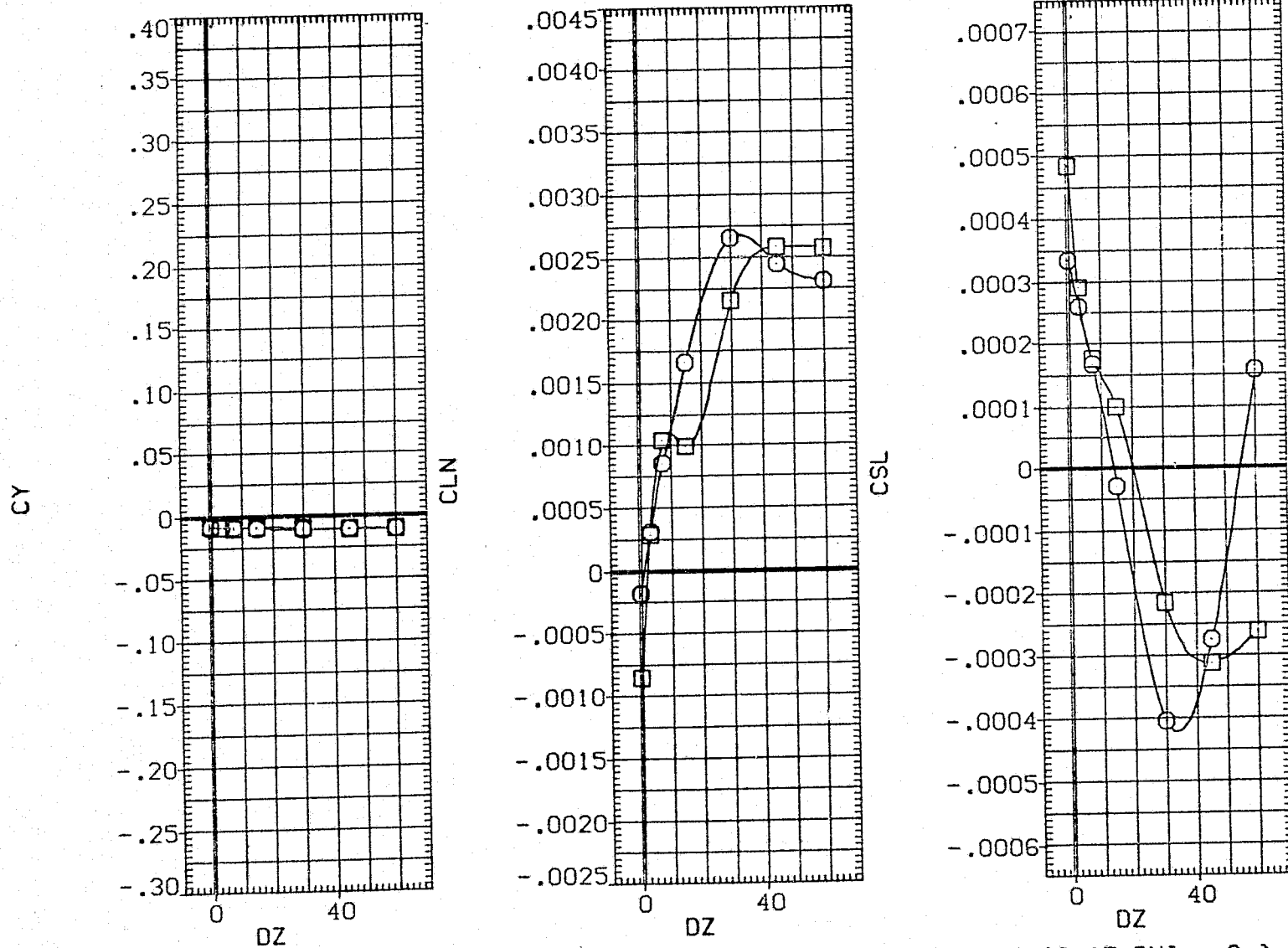


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (129 - 035) (UGN129)

SYMBOL

○
□

ALPHA0

10.000

14.000

PARAMETRIC VALUES

ALPHAC

4.000

BETAC

.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

.000

DY

.000

BETA0

.000

REFERENCE INFORMATION

SREF

5500.0000

50.FT.

LREF

327.7800

IN.

BREF

2348.0400

IN.

XMRP

1339.9000

IN.XC

YMRP

.0000

IN.YC

ZMRP

190.8000

IN.ZC

SCALE

.0300

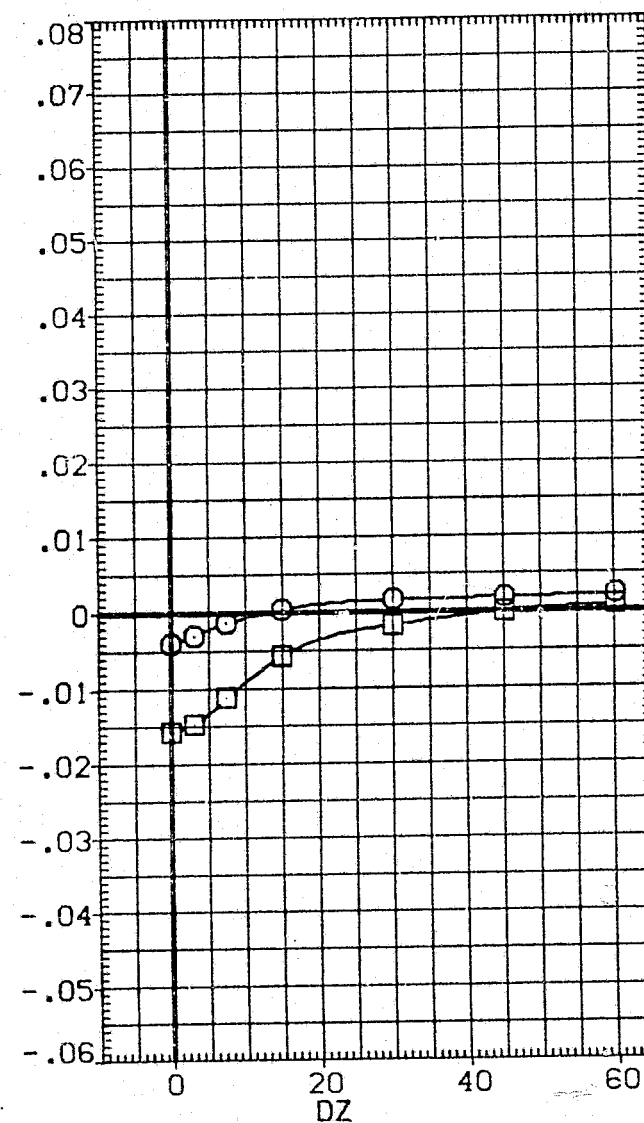
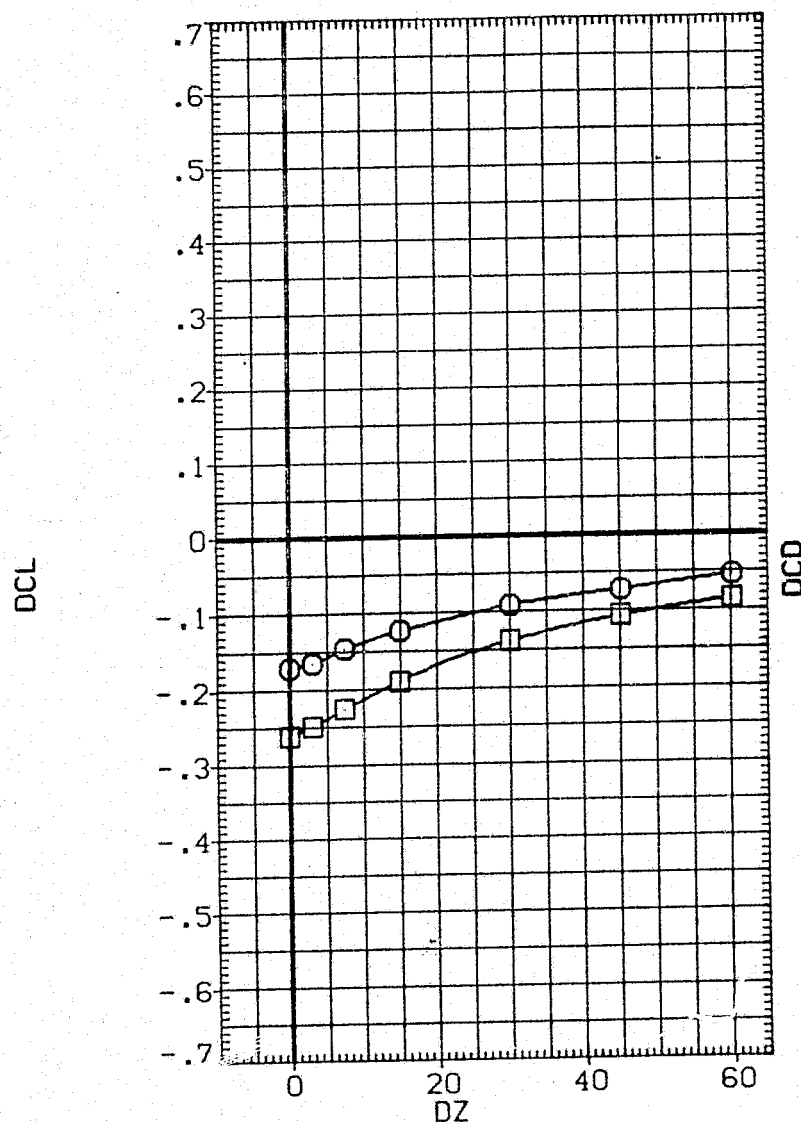


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION		
	10.000	ALPHAC	4.000	BETAC	.000	SREF	5500.0000	SO.FT.
○	14.000	ELV-1B	.000	ELV-0B	3.000	LREF	327.7800	IN.
□		ELEVON	5.000	MACH	.600	BREF	2348.0400	IN.
		PHI	.000	DX	.000	XMRP	1339.9000	IN.XC
		DY	.000	BETA0	.000	YMRP	.0000	IN.YC
						ZMRP	190.8000	IN.ZC
						SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

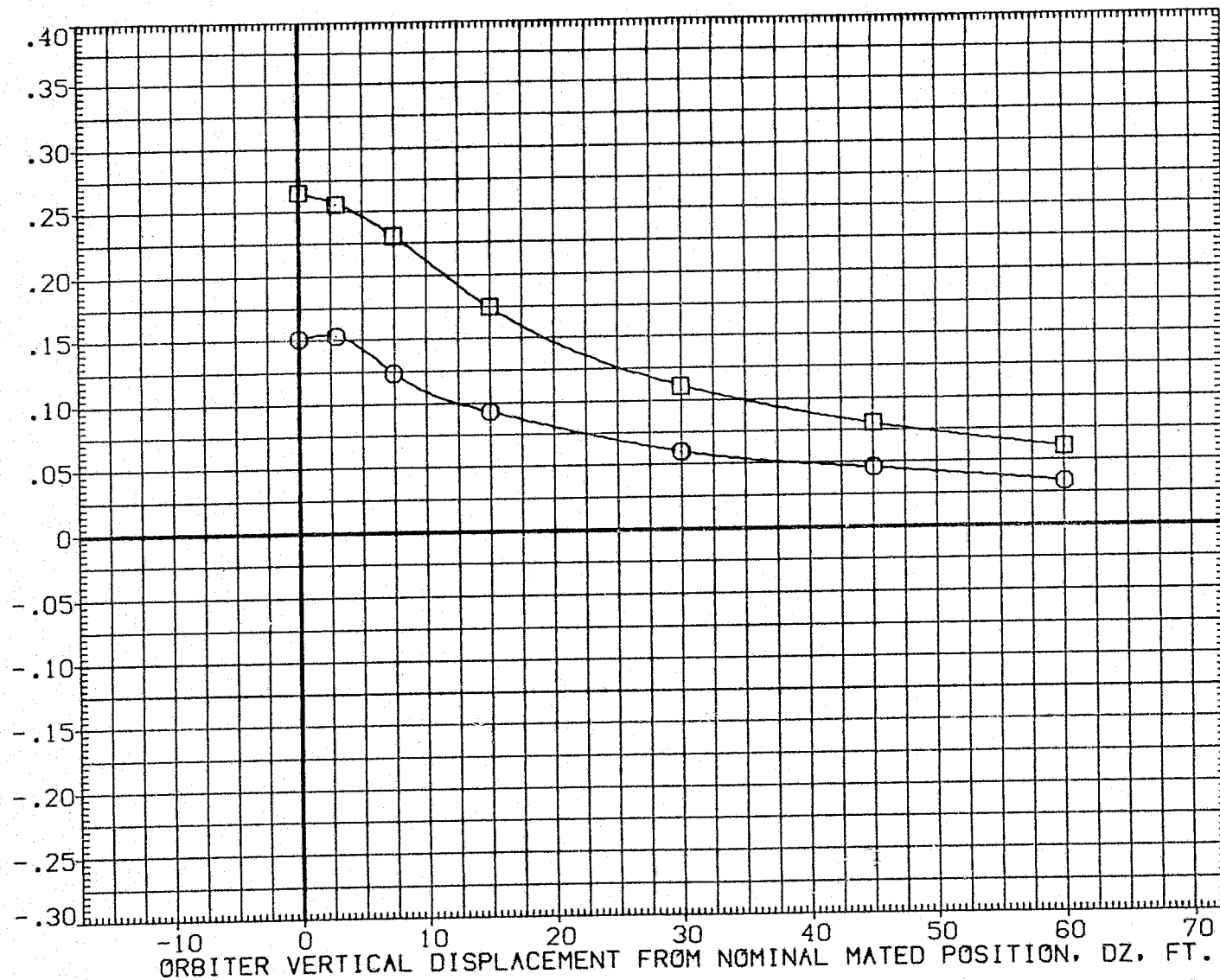


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (129 - 035) (UGN129)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC
○	10.000	4.000	.000	.000
□	14.000	.000	ELV-CB	3.000
		5.000	MACH	.600
		.000	DX	.000
		.000	BETA0	.000

REFERENCE INFORMATION	
SREF	5500.0000 SQ.FT.
LREF	327.7800 IN.
BREF	2348.0400 IN.
XMRP	1339.9000 IN.XC
YMRP	.0000 IN.YC
ZMRP	190.8000 IN.ZC
SCALE	.0300

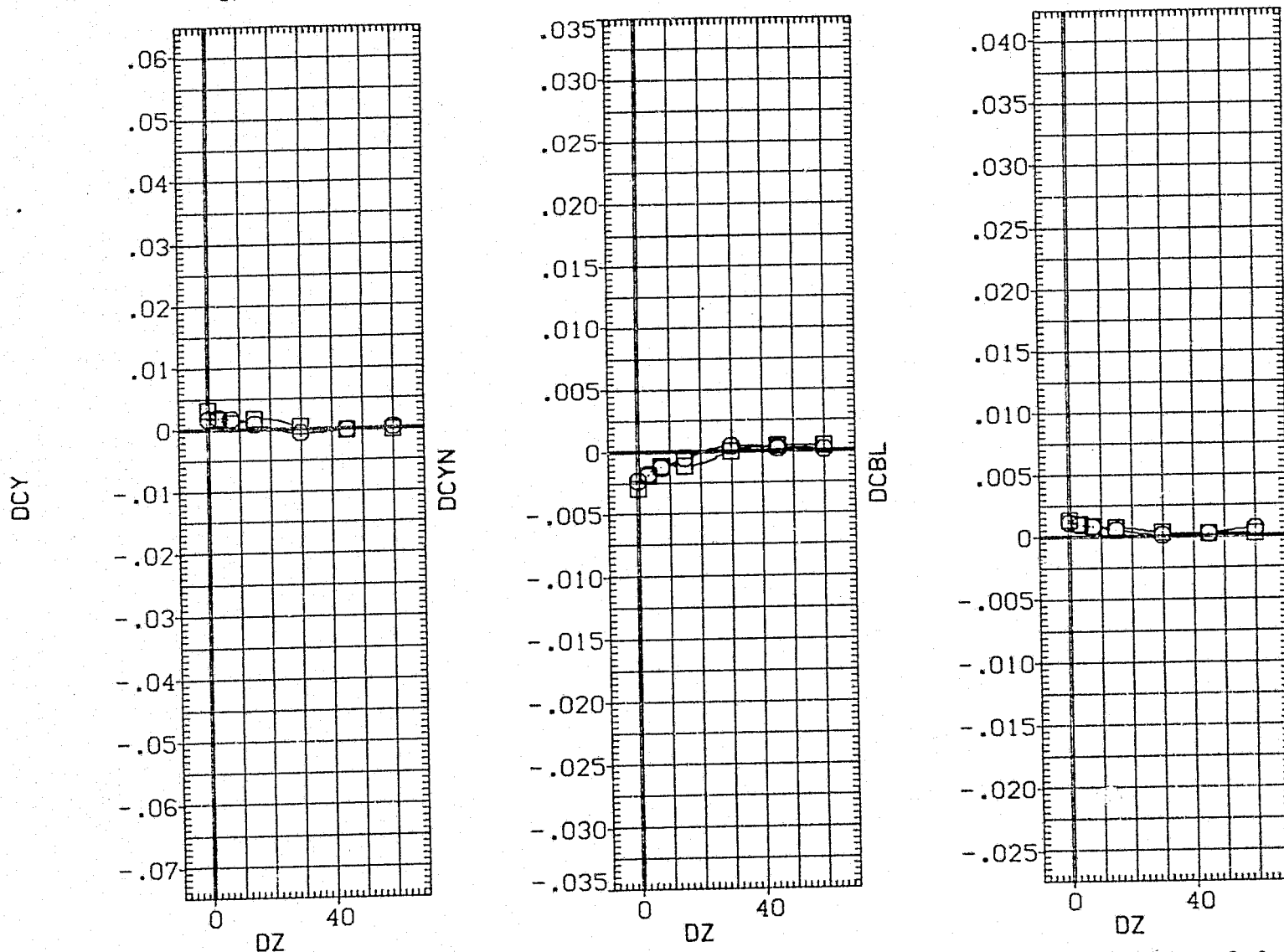


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC	
○	10.000	ELV-1B	4.000	ELV-0B	.000
□	14.000	ELEVON	.000	MACH	3.000
		PHI	5.000	DX	.600
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.9400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

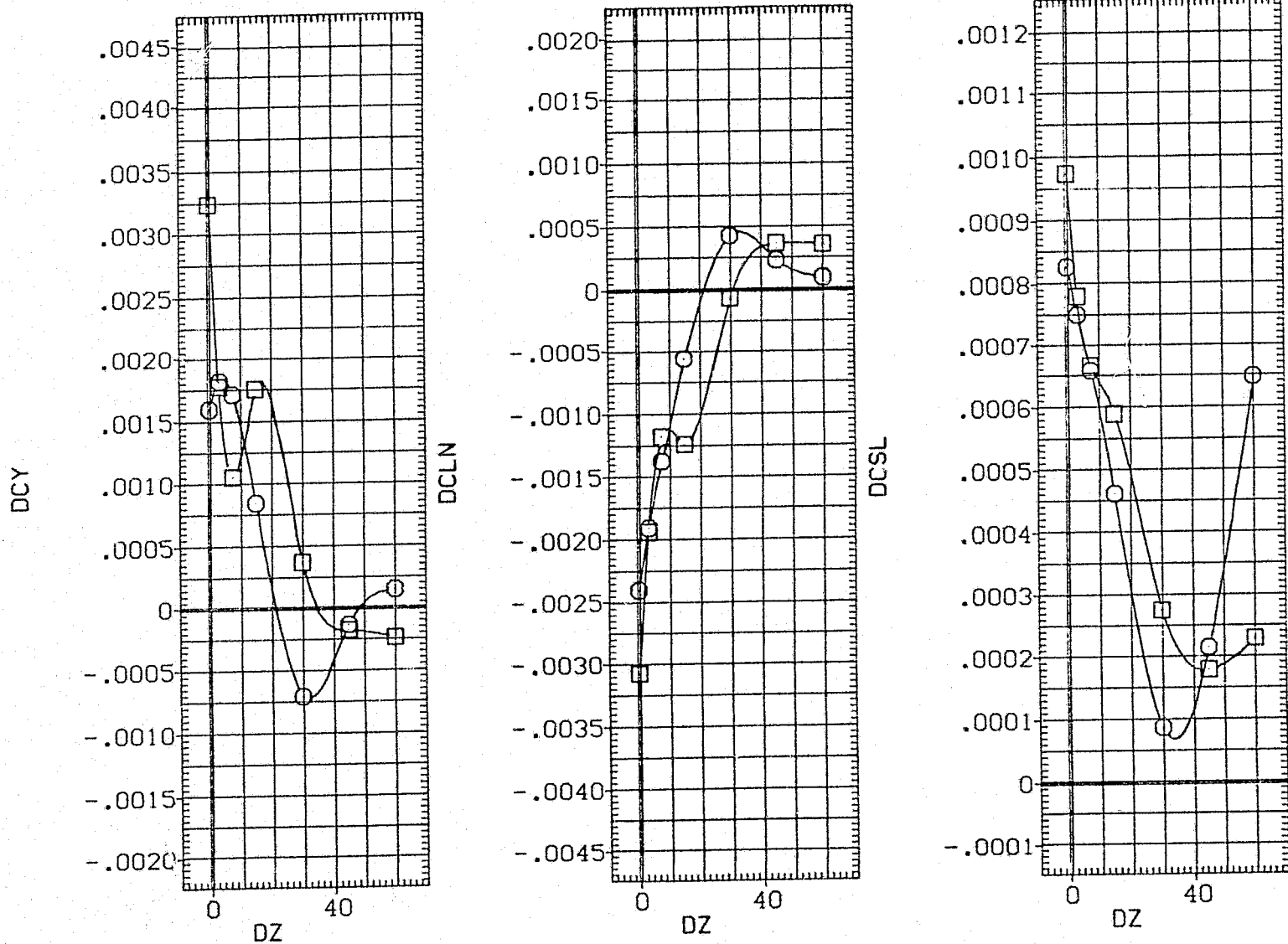


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN130)

SYMBOL	ALPHA	BETAC	PARAMETRIC VALUES	ELV-1B	
○	10.000		.000	5.000	
□	14.000	ELV-0B	3.000	BETA0	.000
		MACH	.600	DY	.000
		PHI	.000	ALPHAC	4.000
		DX	10.000		

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

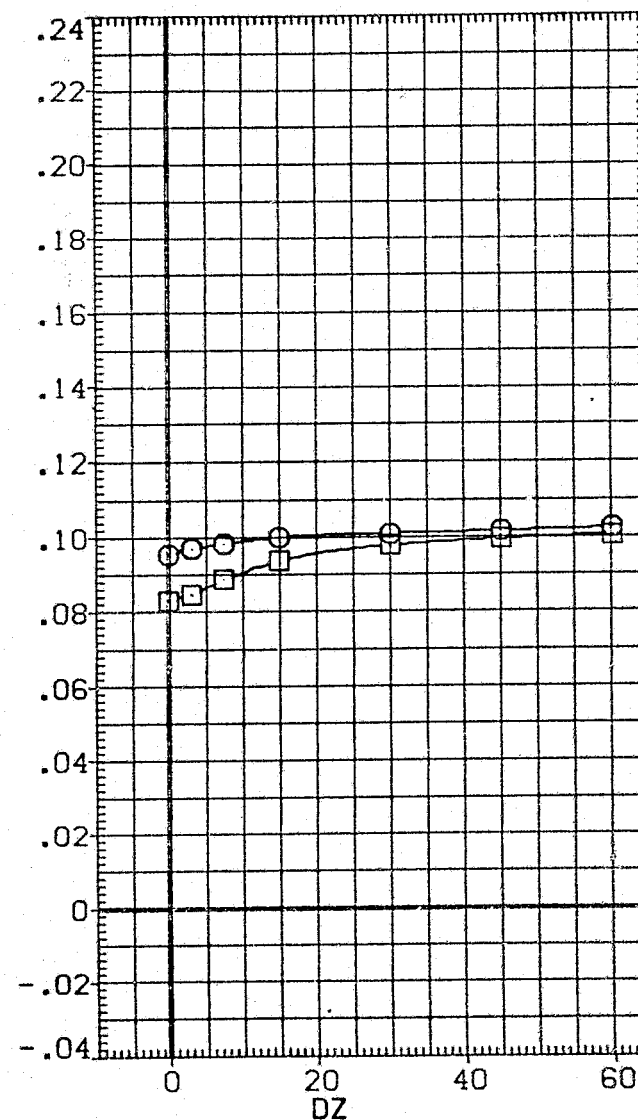
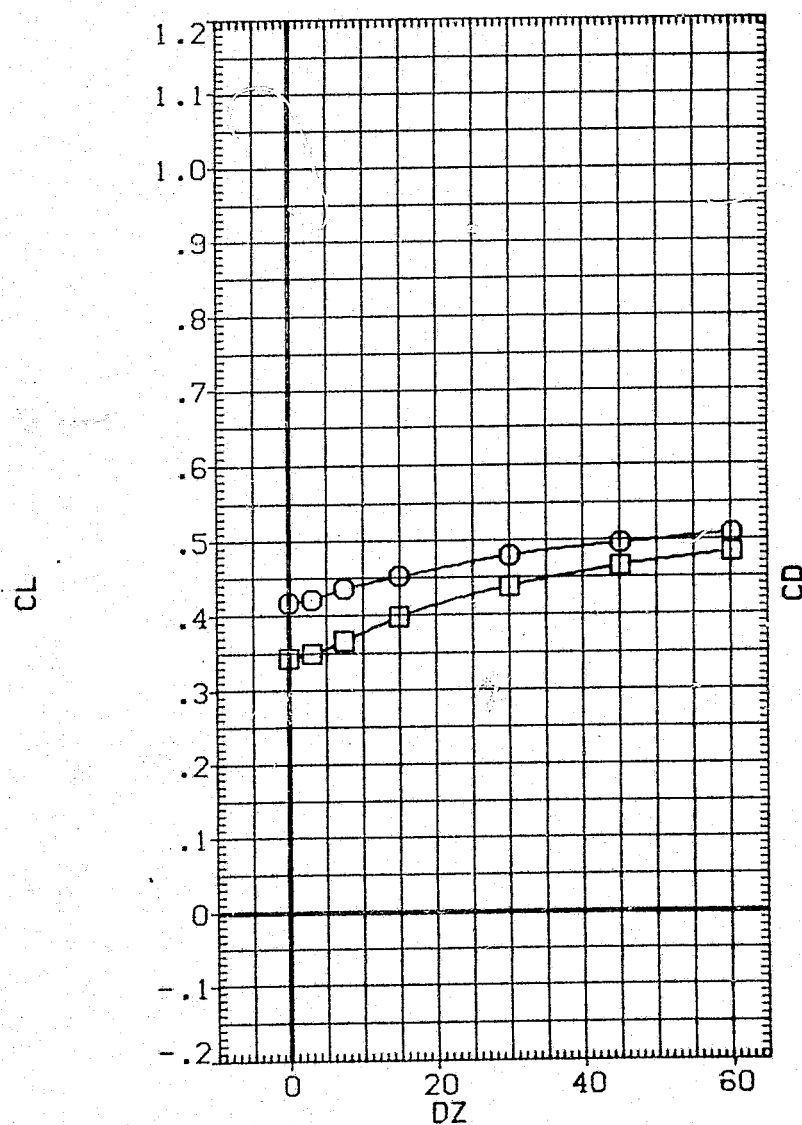


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN130)

SYMBOL	ALPHA0	BETAC	ELV-1B	ELV-0B	MACH	PHI	DX	PARAMETRIC VALUES	ELV-1B	ELEVON	BETA0	DY	ALPHAC
○	10.000		.000						.000				
□	14.000		3.000		.600	.000	10.000		5.000		.000		4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
SREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

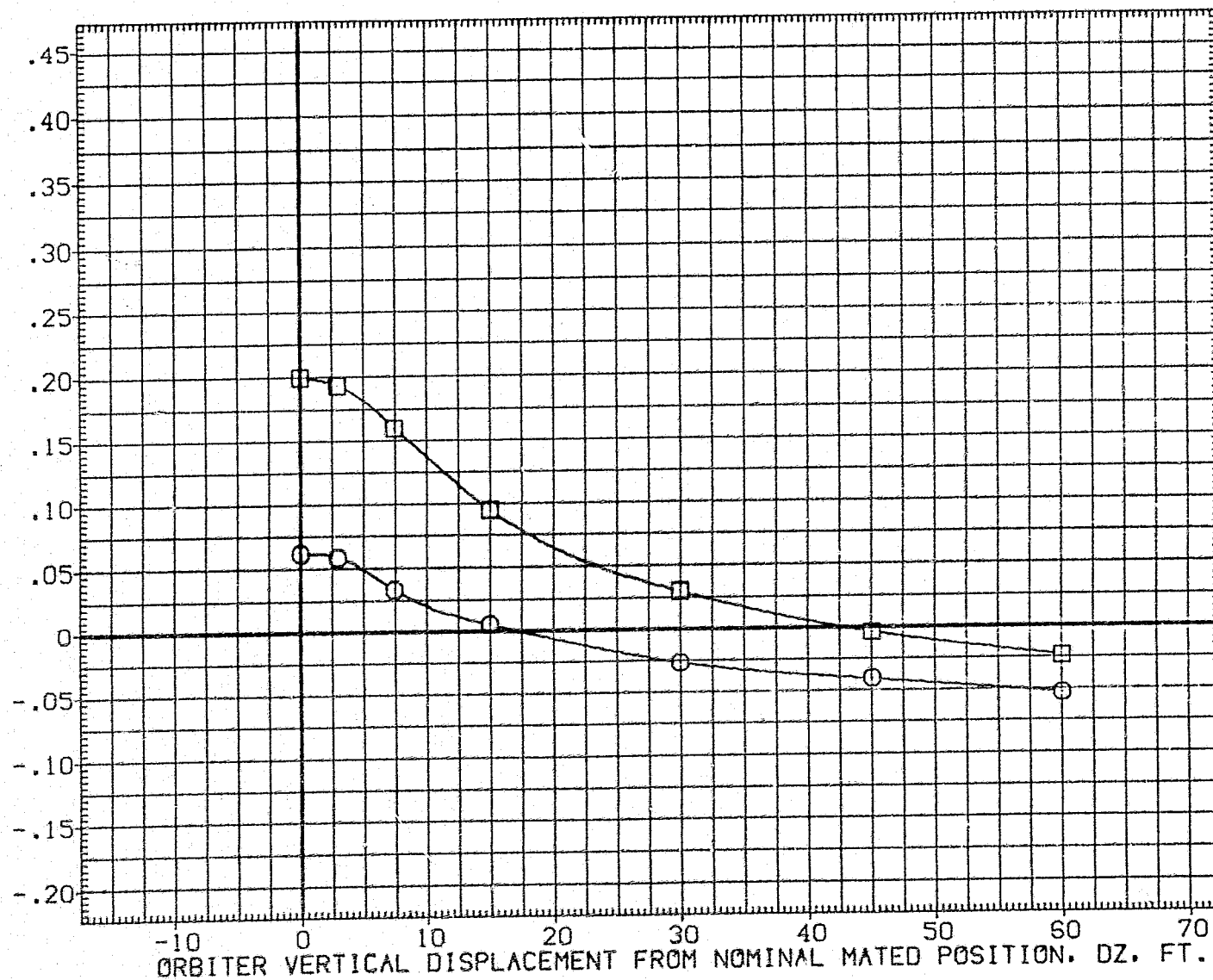


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN130)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-1B
○	10.000	.000	ELV-0B	5.000
□	14.000	3.000	MACH	.000
		.600	PHI	.000
		.000	DY	.000
		10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.9000	IN.ZC
SCALE	.0300	

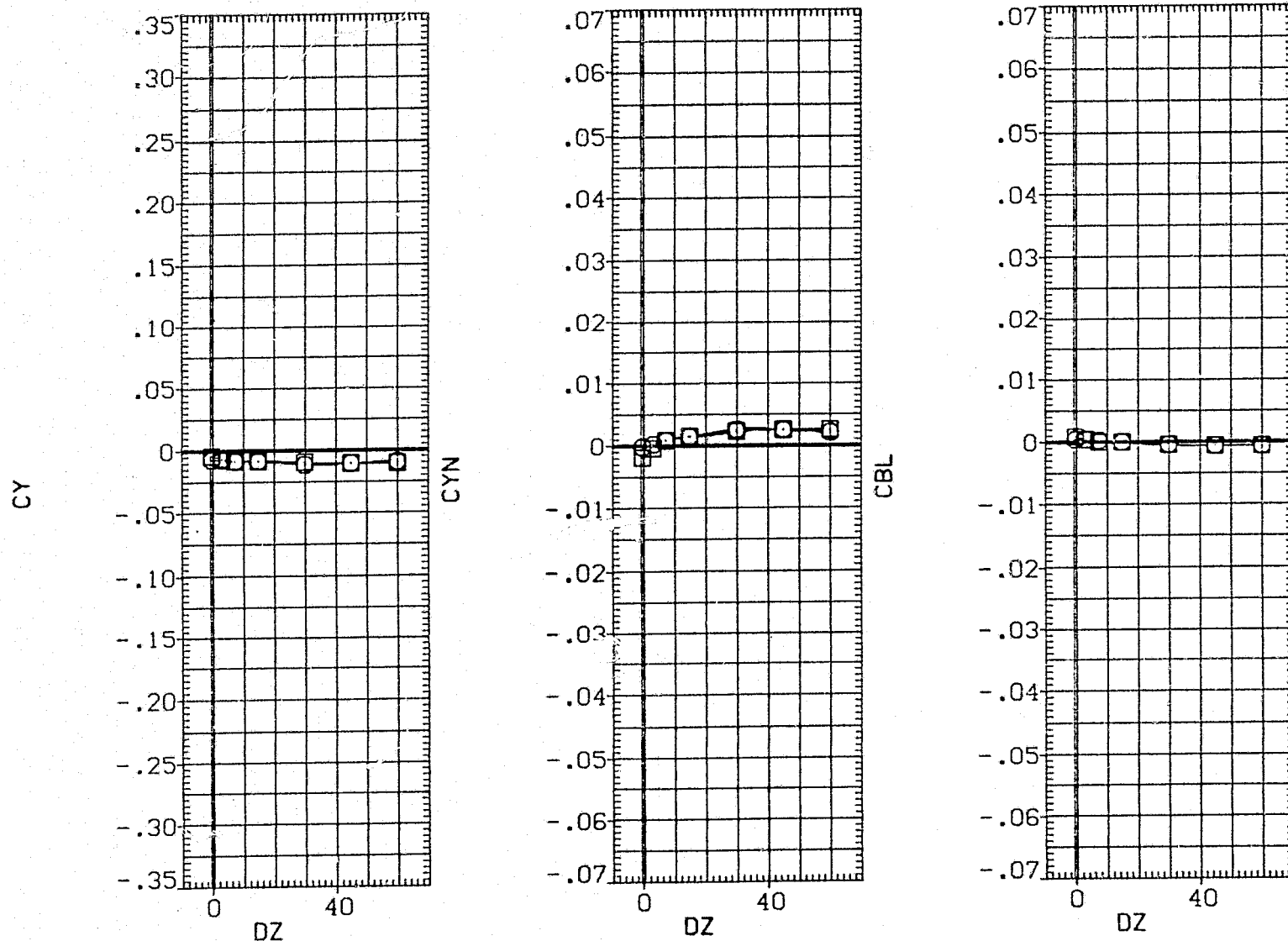


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN130)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-1B	
○	10.000	BETAC	.000	ELV-1B	.000
□	14.000	ELV-0B	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	10.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

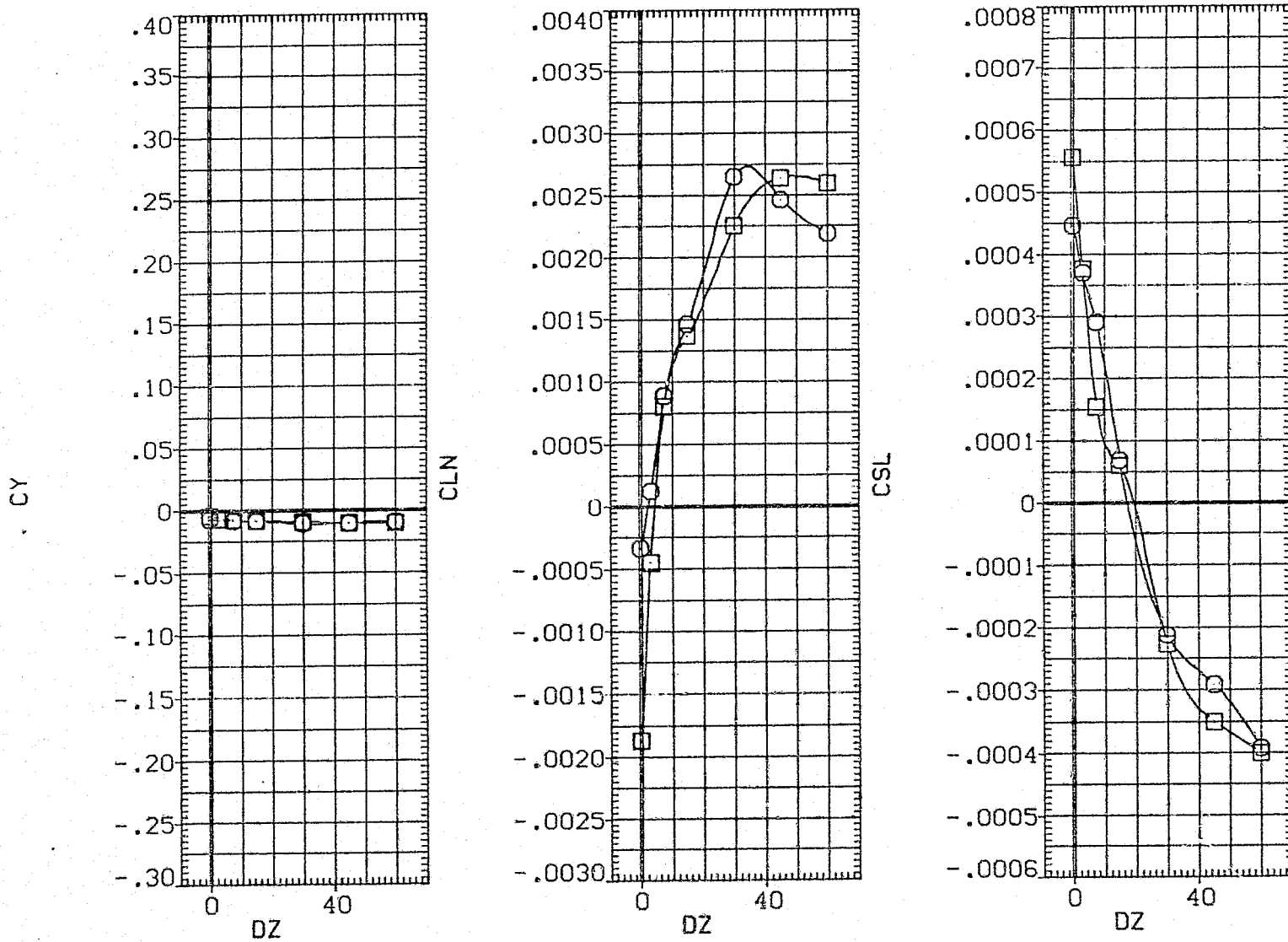


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (130 - 035) (UGN130)

SYMBOL

○
□

ALPHA0

10.000
14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF 5500.0000

LREF 327.7800

BREF 2348.0400

XMRP 1339.9000

YMRP .0000

ZMRP 190.8000

SCALE .0300

50.FT.

IN.

IN.

IN.XC

IN.YC

IN.ZC

DCL

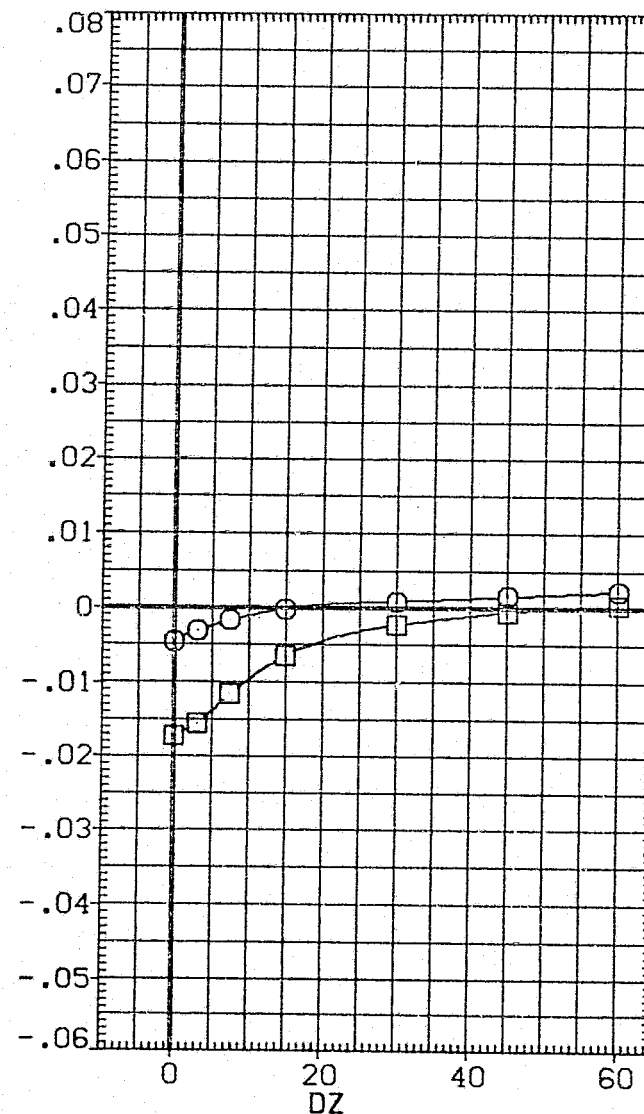
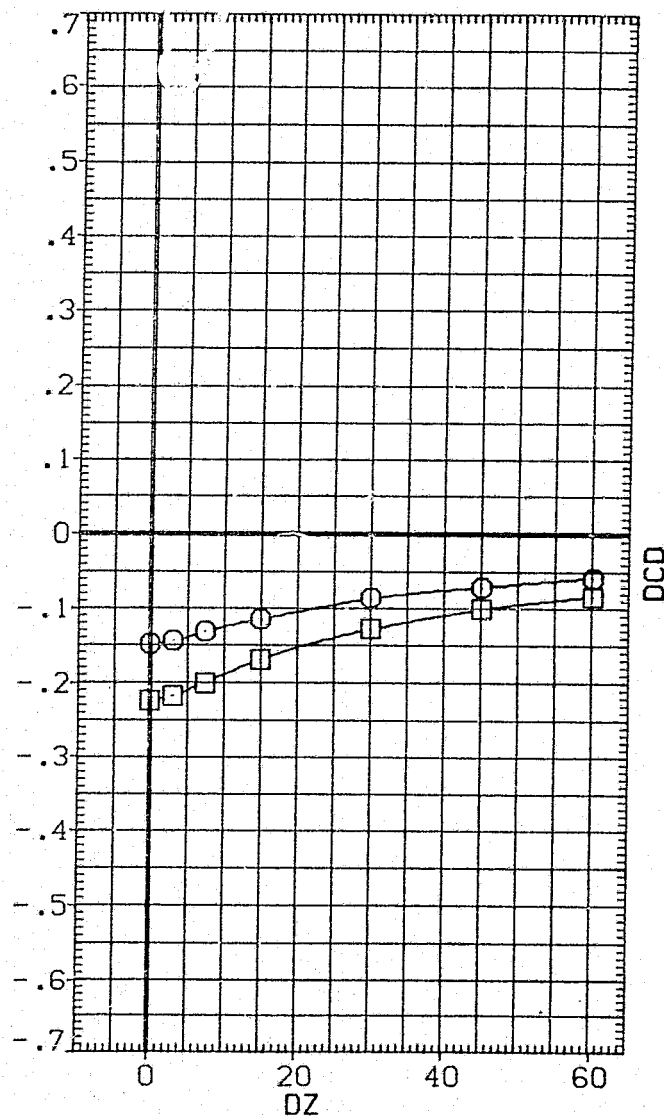


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (130 - 035) (UGN130)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

BETAC

.000

ELV-08

3.000

MACH

.600

DX

10.000

BETA0

.000

REFERENCE INFORMATION

SREF 5500.0000

SQ.FT.

LREF 327.7800

IN.

BREF 2348.0400

IN.

XMRP 1339.9000

IN.XC

YMRP .0000

IN.YC

ZMRP 190.8000

IN.ZC

SCALE .0300

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

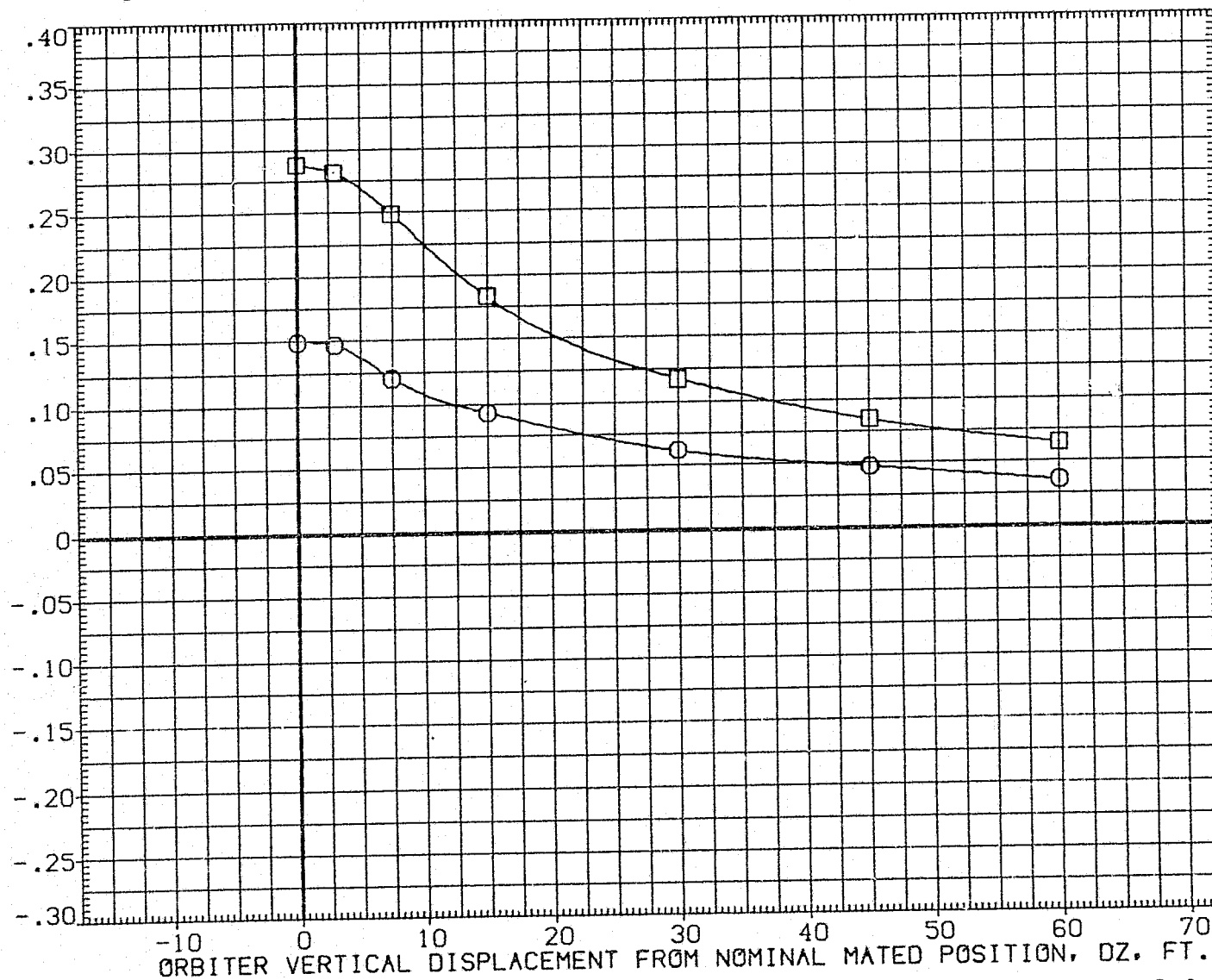


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (130 - 035)(UGN130)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
YMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

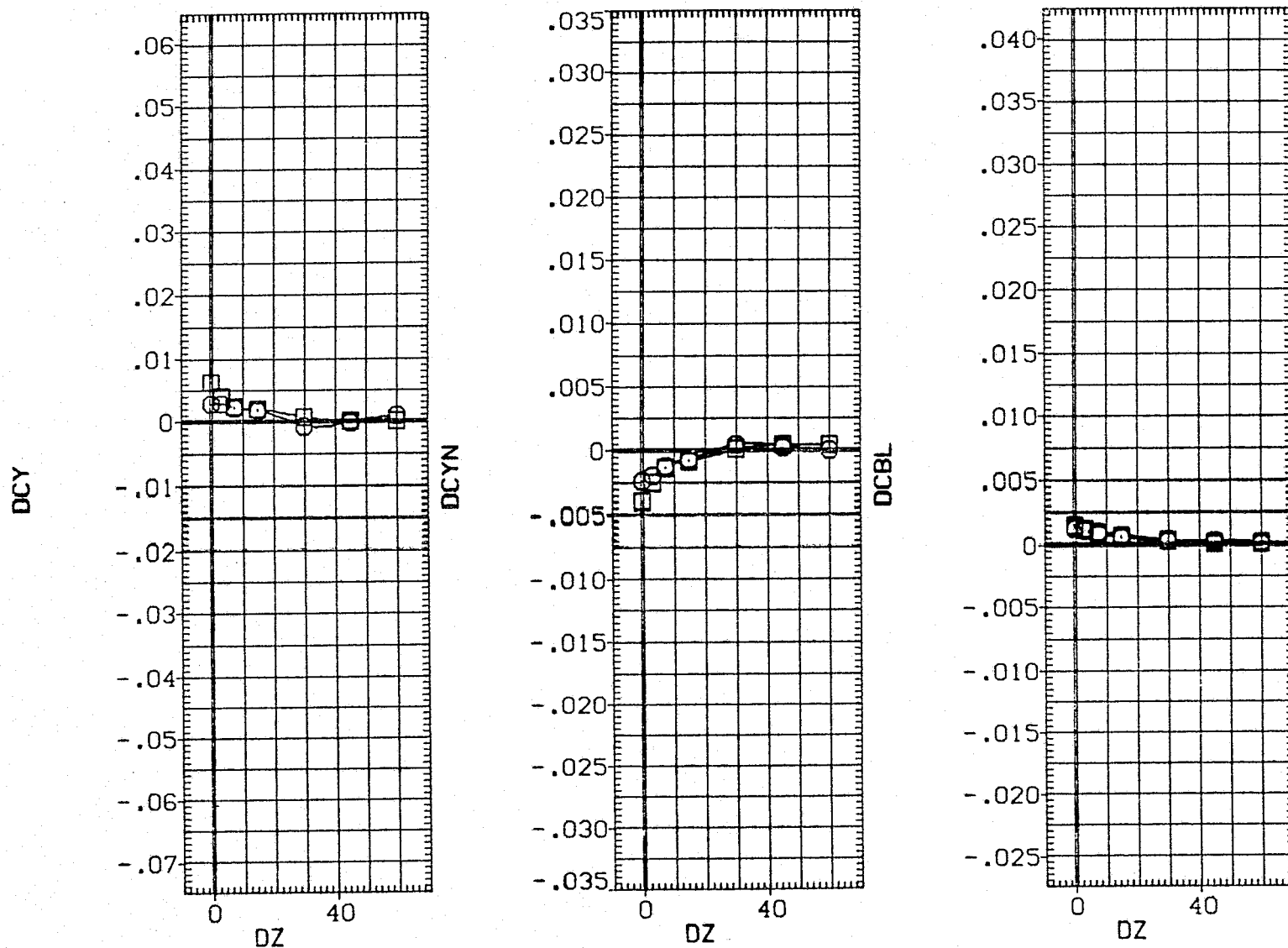


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETAO	.000

REFERENCE INFORMATION		
SREF	5500.0000	SD.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

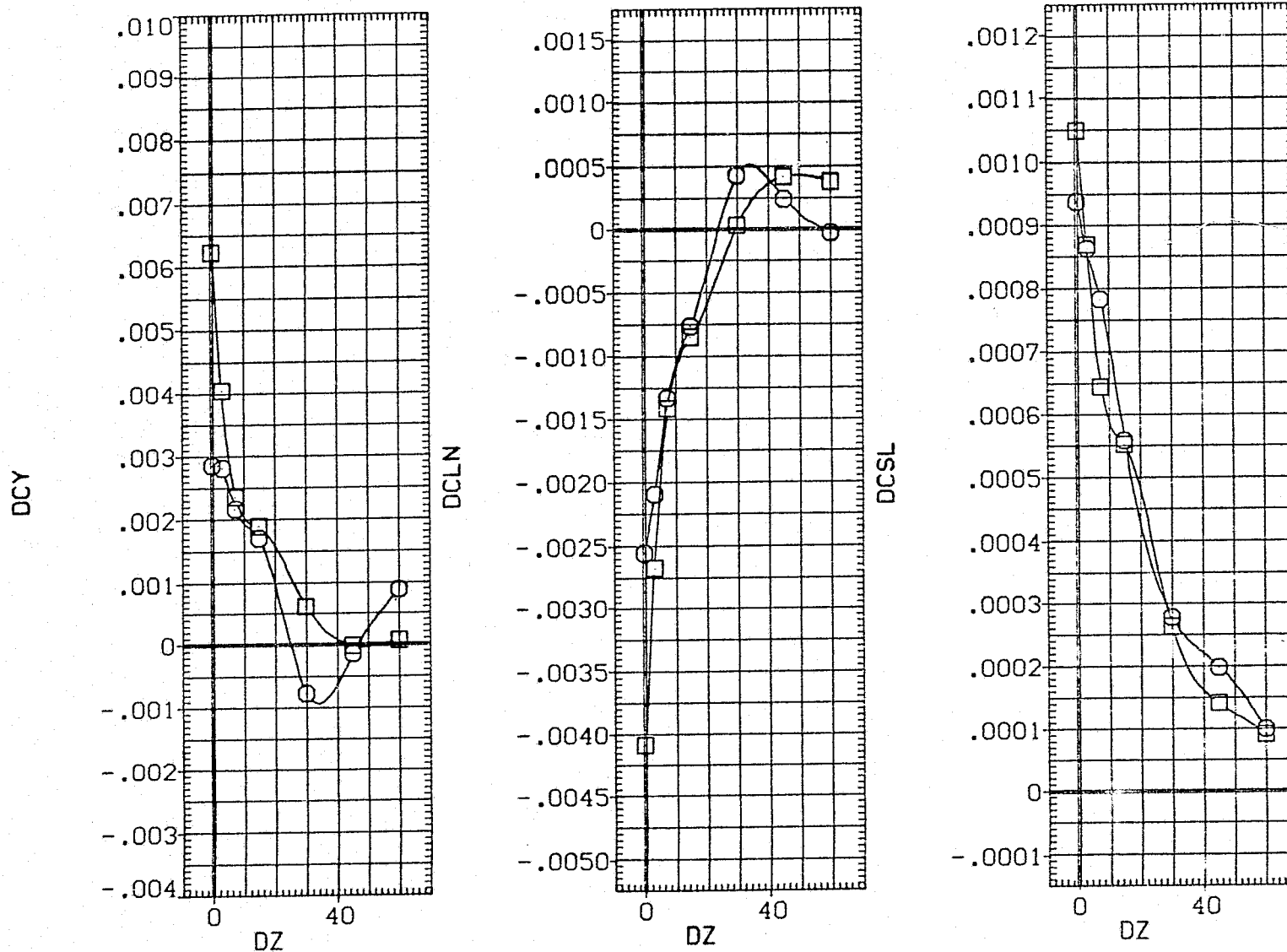


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN131)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-1B	
○	10.000	.000	ELV-0B	3.000	ELEVON
□	14.000	.600	BETA0	.000	
		.000	DI	.000	
		20.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

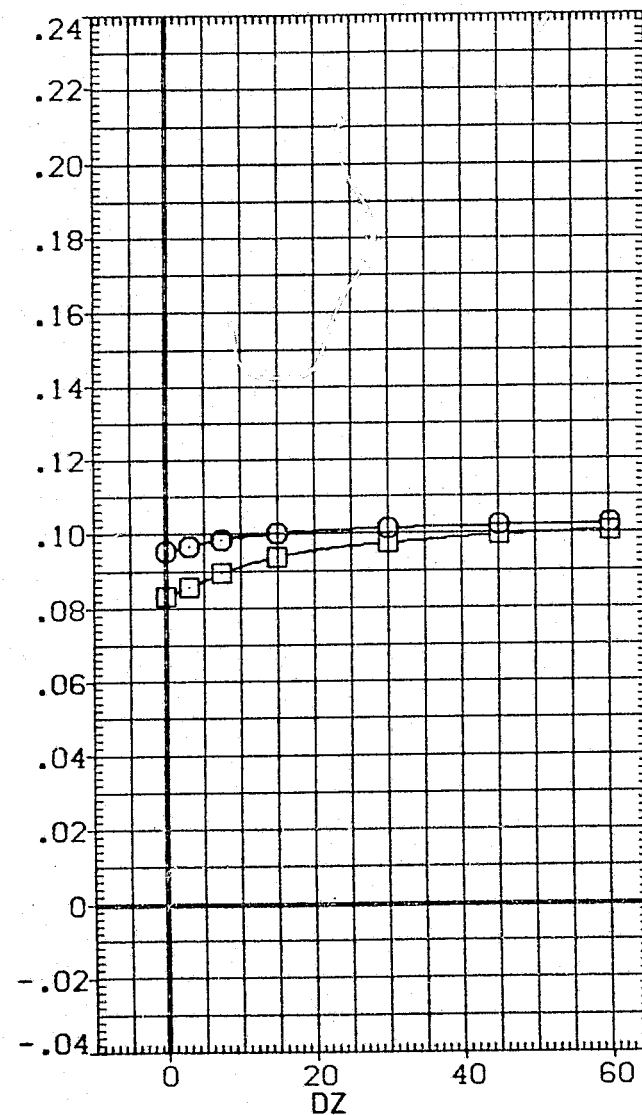
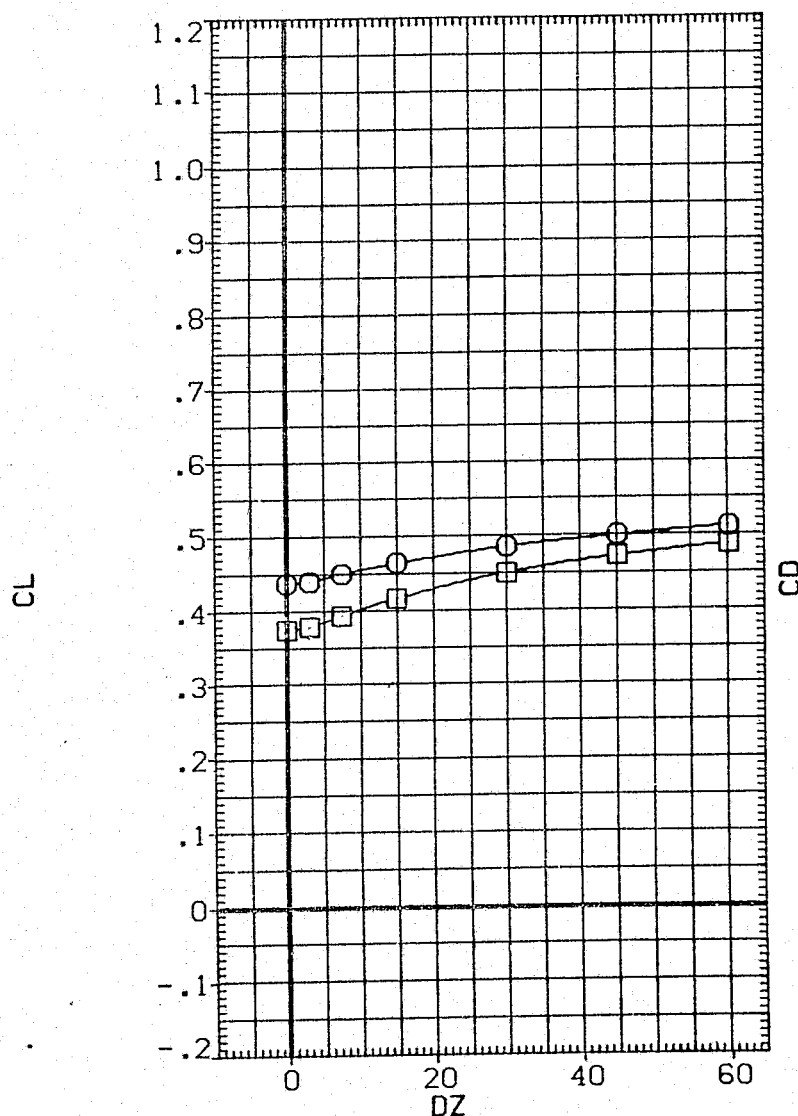


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN131)

SYMBOL		PARAMETRIC VALUES				
<div style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></div> <div style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; margin-right: 5px;"></div>	ALPHA0	10.000	BETAC	.000	ELV-IB	.000
		14.000	ELV-OB	3.000	ELEVON	5.000
			MACH	.600	BETA0	.000
			PHI	.600	DY	.000
			DX	20.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

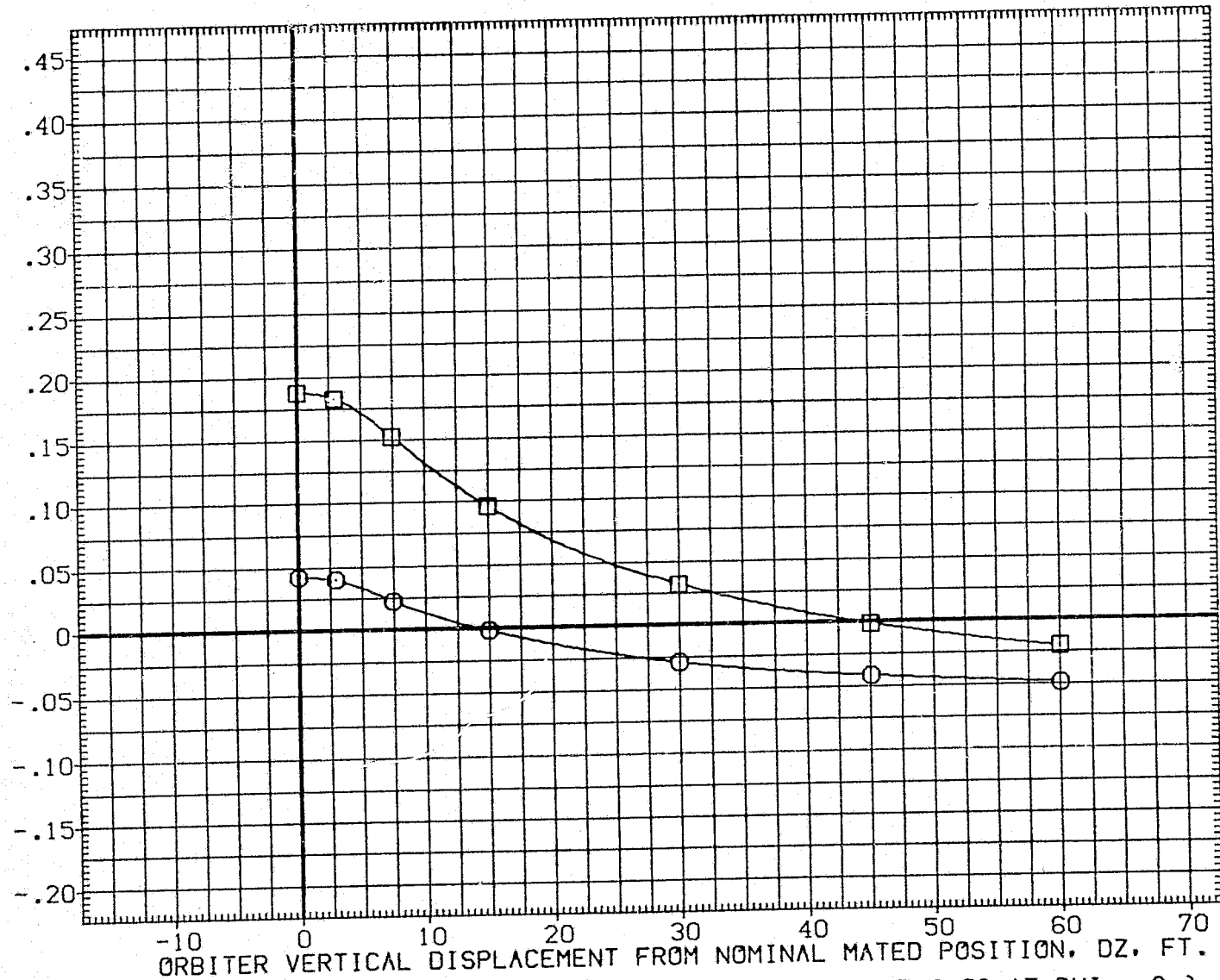


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN131)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-1B
○	10.000	.000	ELV-0B	.000
□	14.000	3.000	ELEVON	5.000
		.600	BETA0	.000
		.000	DY	.000
		20.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

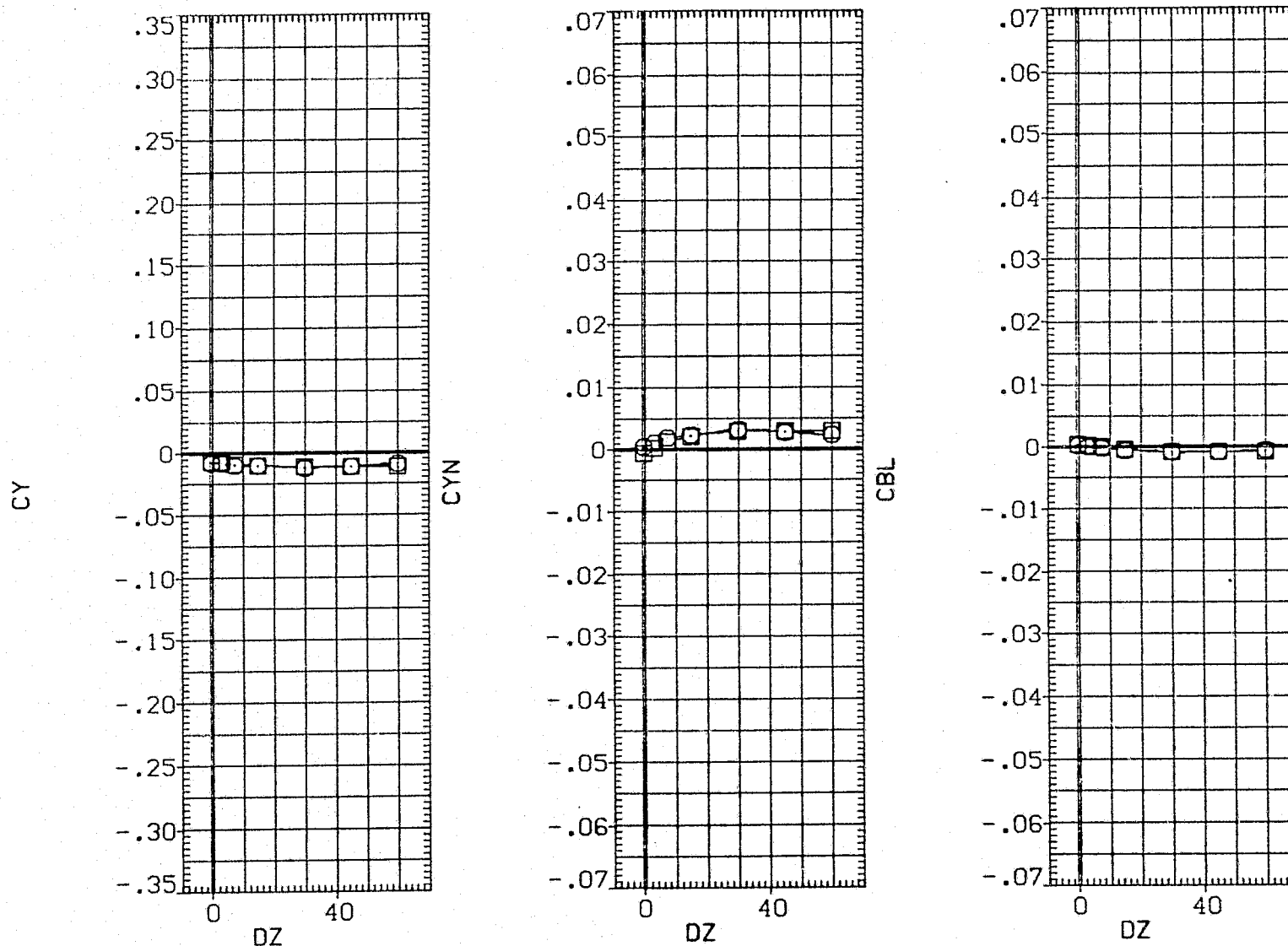


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN131)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-IB	
○	10.000		.000	.000	
□	14.000	ELV-0B	3.000	5.000	
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	20.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

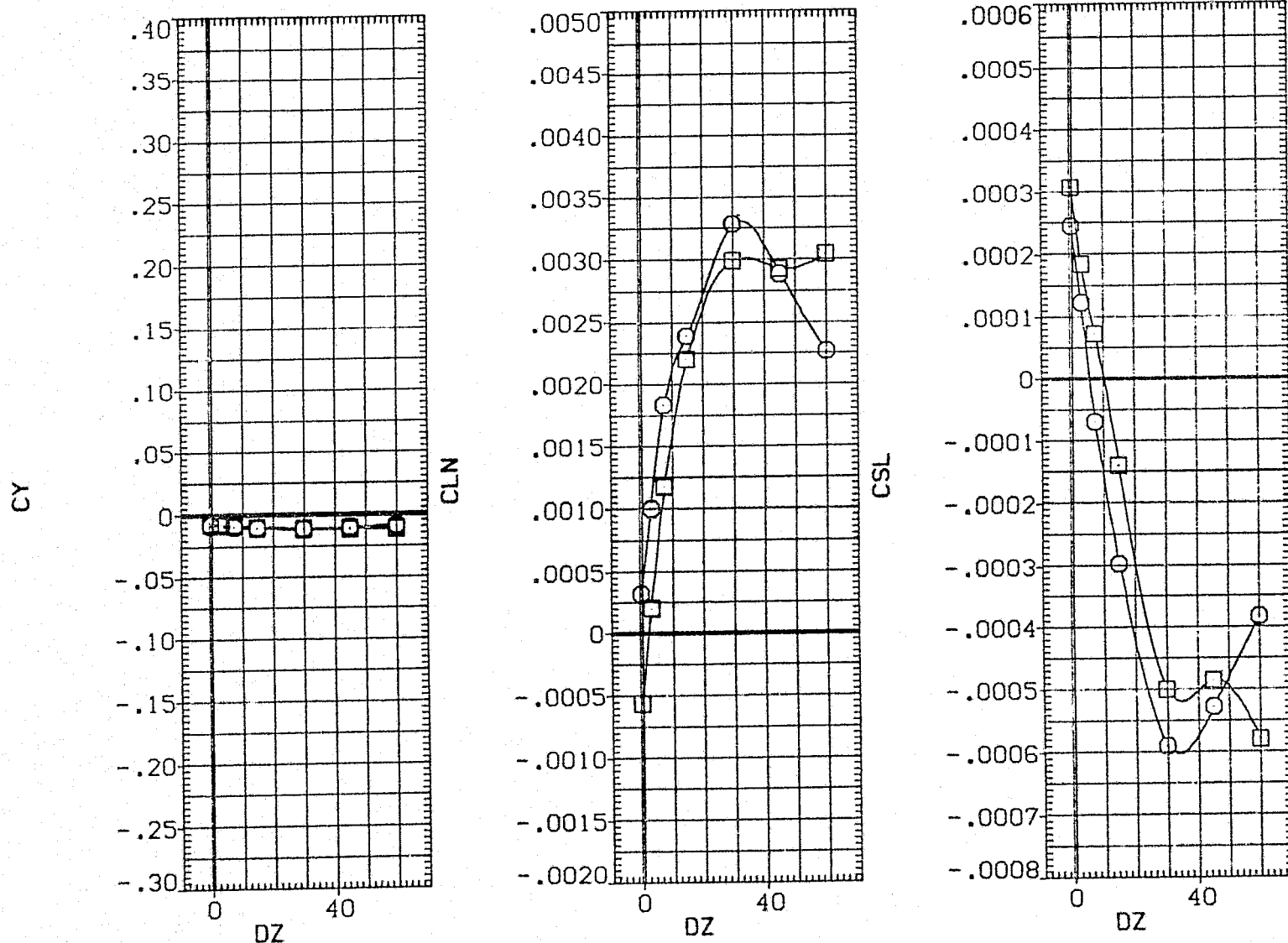


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (131 - 035) (UGN131)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

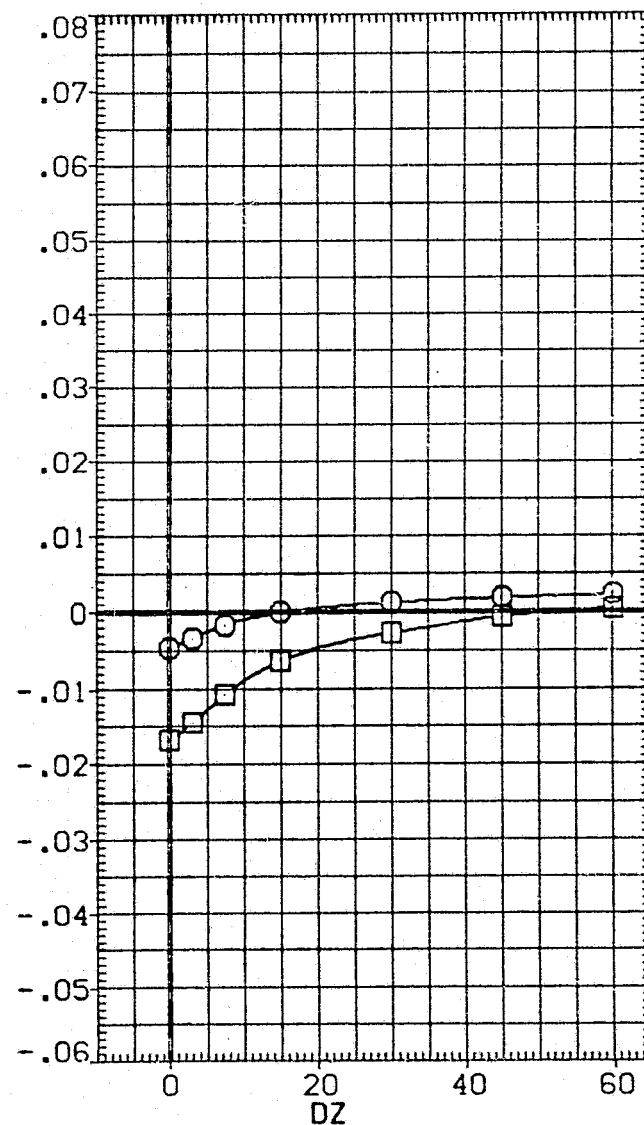
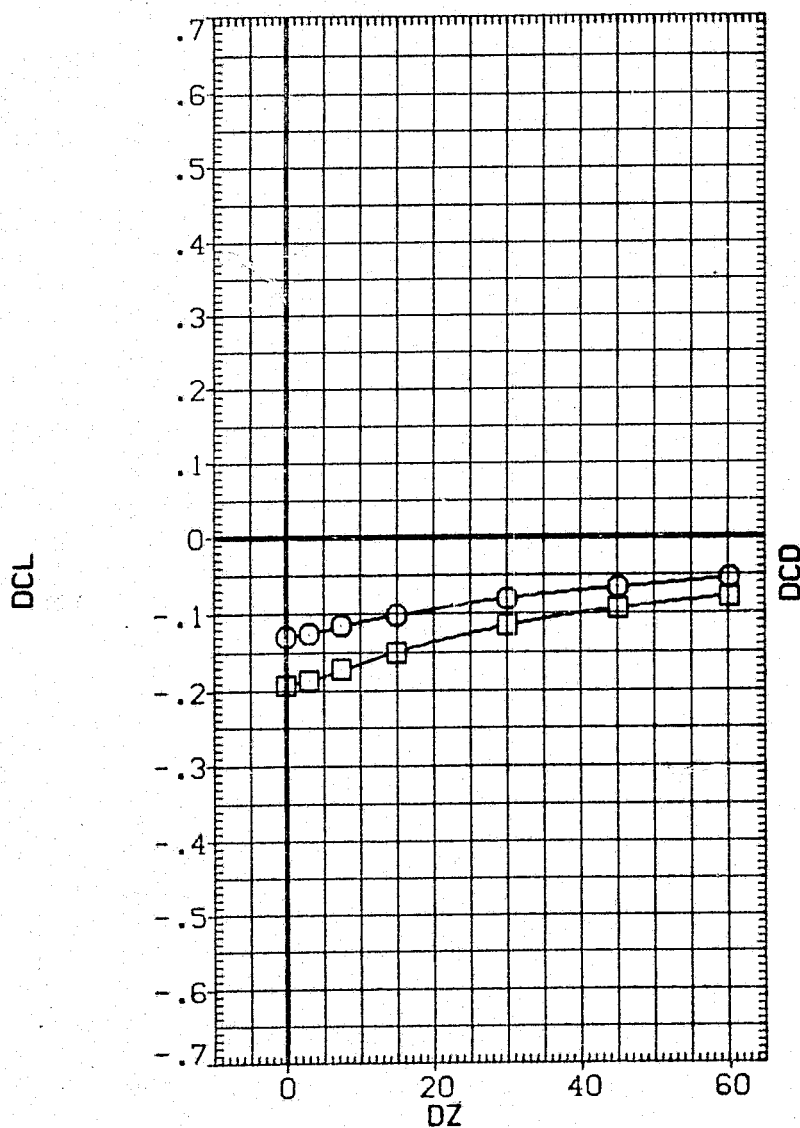


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000
14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

20.000

.000

REFERENCE INFORMATION

SREF 5500.0000

LREF 327.7800

BREF 2348.0400

XMRP 1339.9000

YMRP .0000

ZMRP 190.8000

SCALE .0300

50.FT.

IN.

IN.

IN.XC

IN.YC

IN.ZC

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

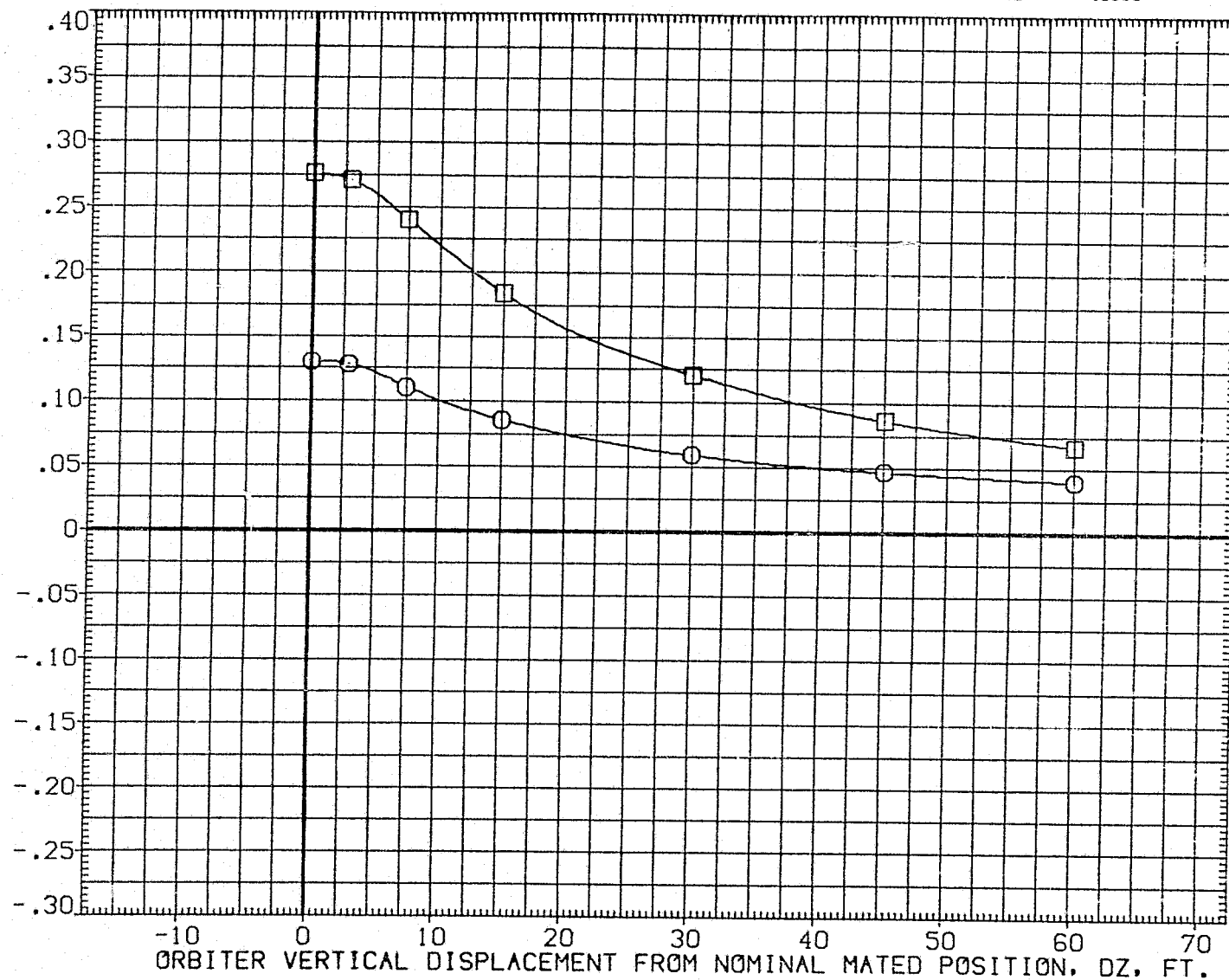


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

(A20 (747/1 02 S1) - (747/1)

D/S (131 - 035) (UGN131)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

ALPHAC 4.000

ELV-1B .000

ELEVON 5.000

PHI .000

DY .000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

20.000

.000

REFERENCE INFORMATION

SREF 5500.0000

LREF 327.7800

BREF 2348.0400

XMRP 1339.9000

YMRP .0000

ZMRP 190.8000

SCALE .0300

SQ.FT.

IN.

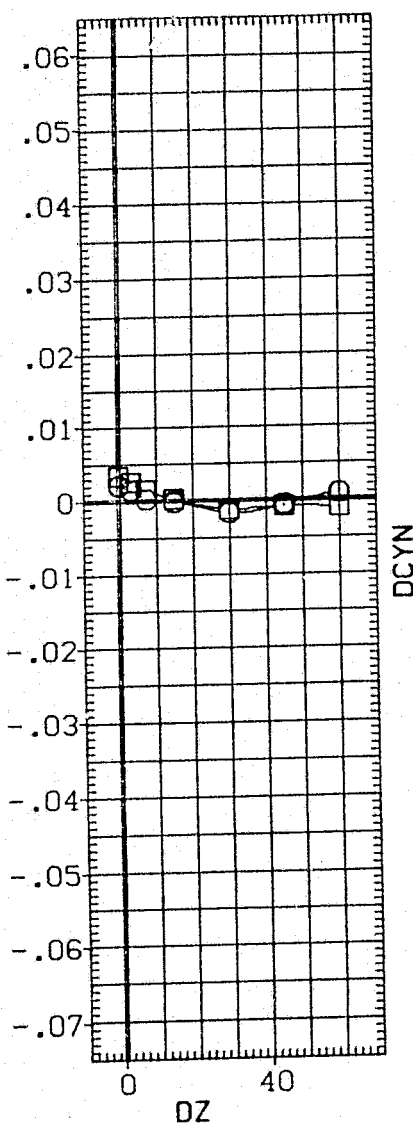
IN.

IN.XC

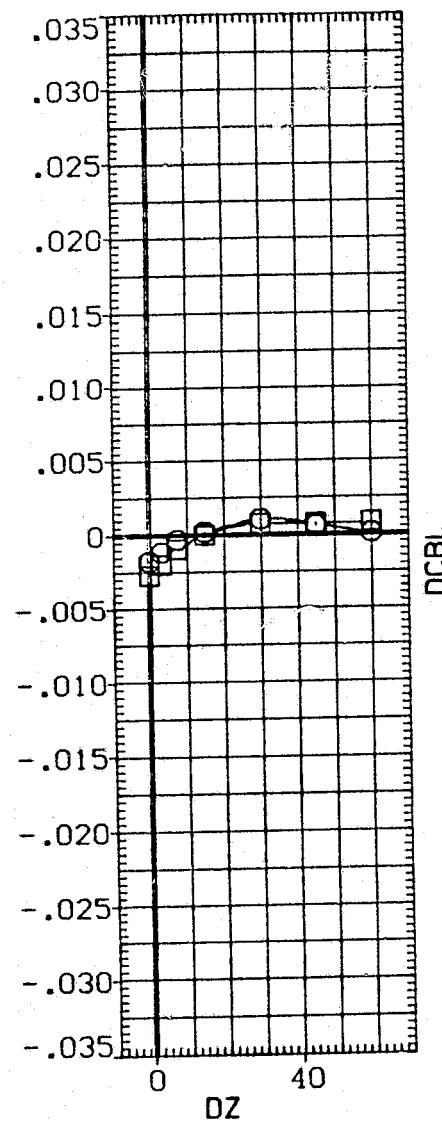
IN.YC

IN.ZC

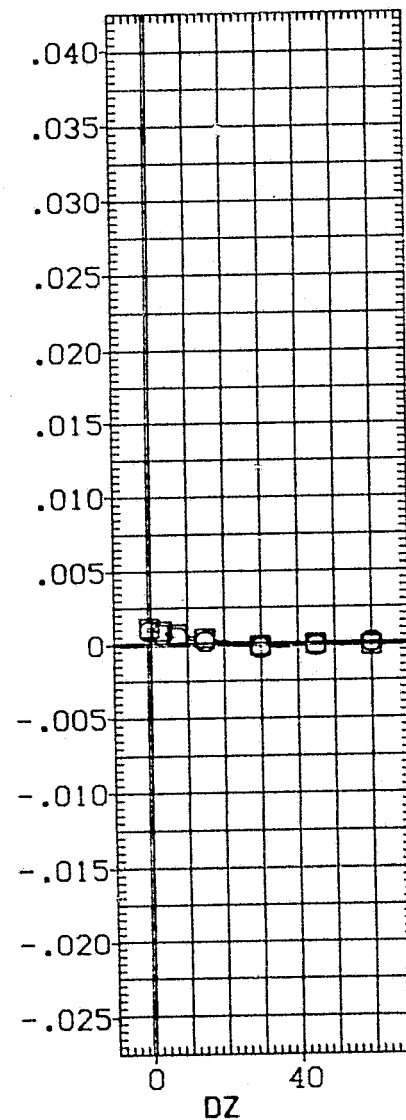
DCY



DCYN



DCBL



DZ

FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES		
	10.000	ALPHAC	4.000	BETAC	.000
○	14.000	ELV-1B	.000	ELV-0B	3.000
□		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

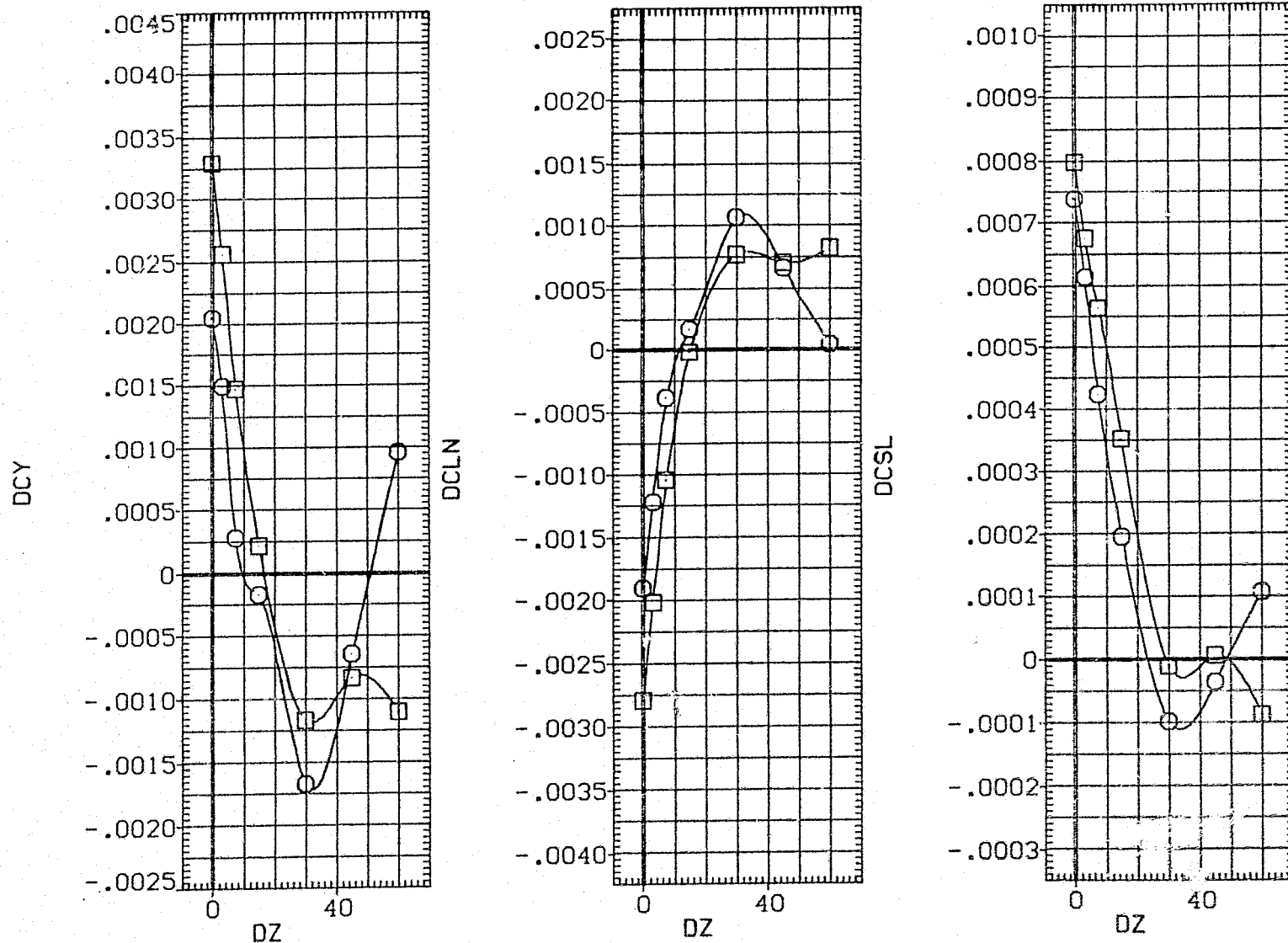


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN132)

SYMBOL	ALPHA	PARAMETRIC VALUES			
○	10.000	BETAC	.000	ELV-1B	.000
□	14.000	ELV-0B	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

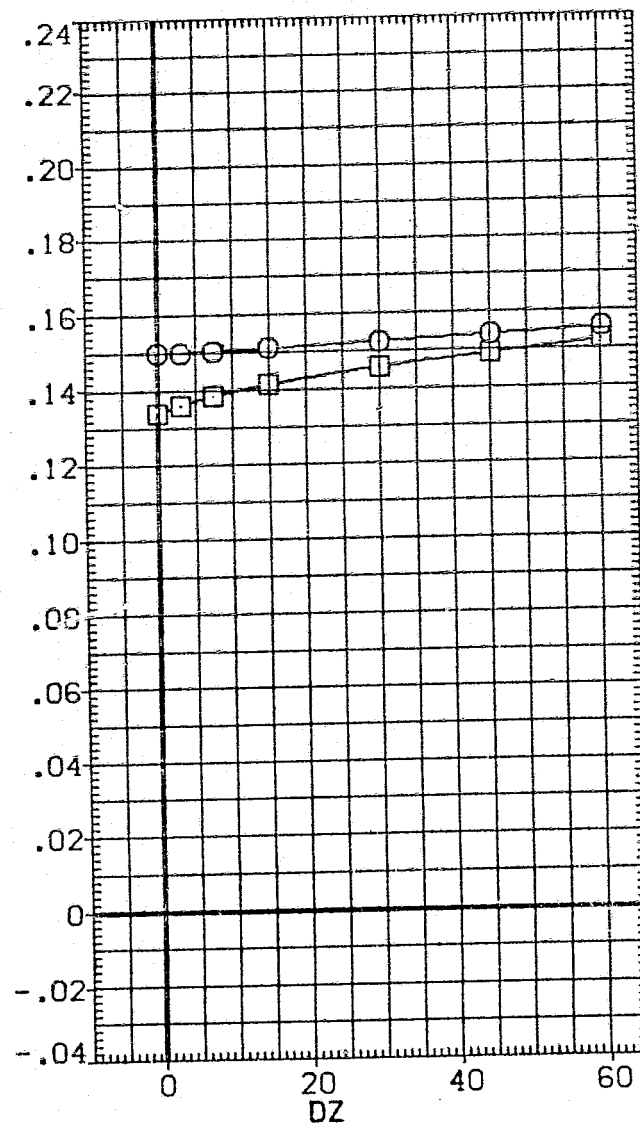
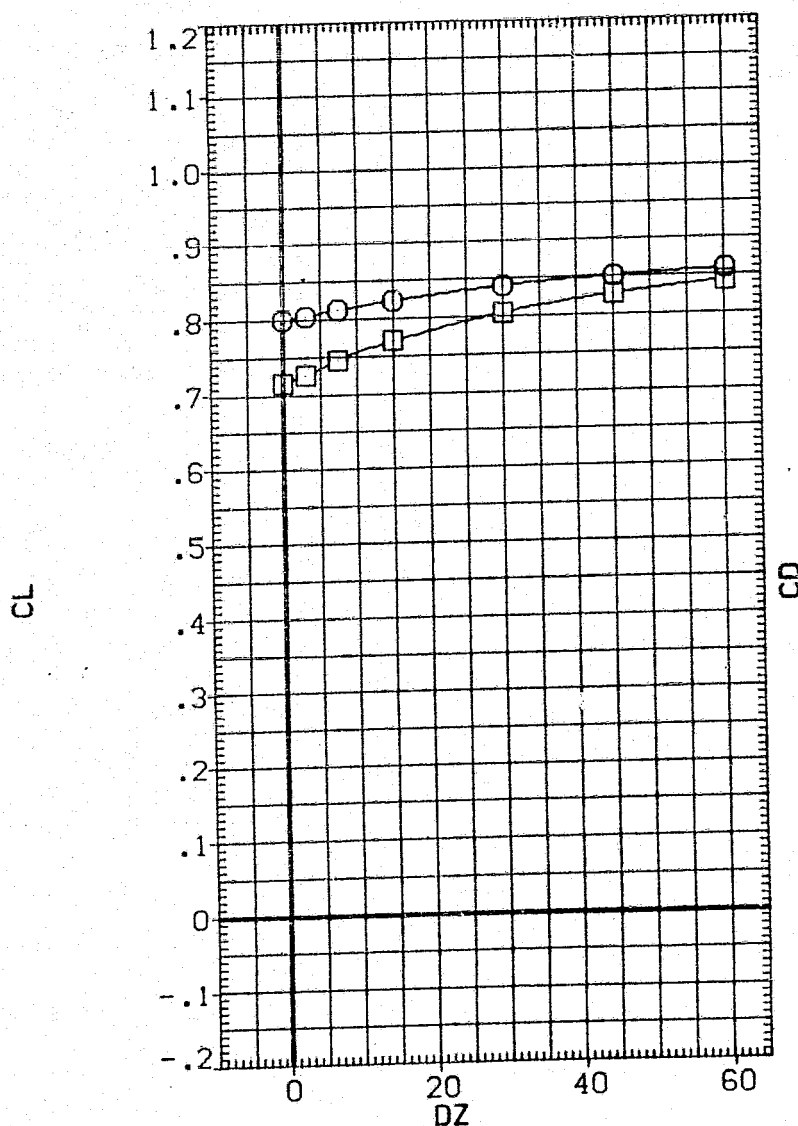


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN132)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	BETAC	.000	ELV-18	.000
□	14.000	ELV-08	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

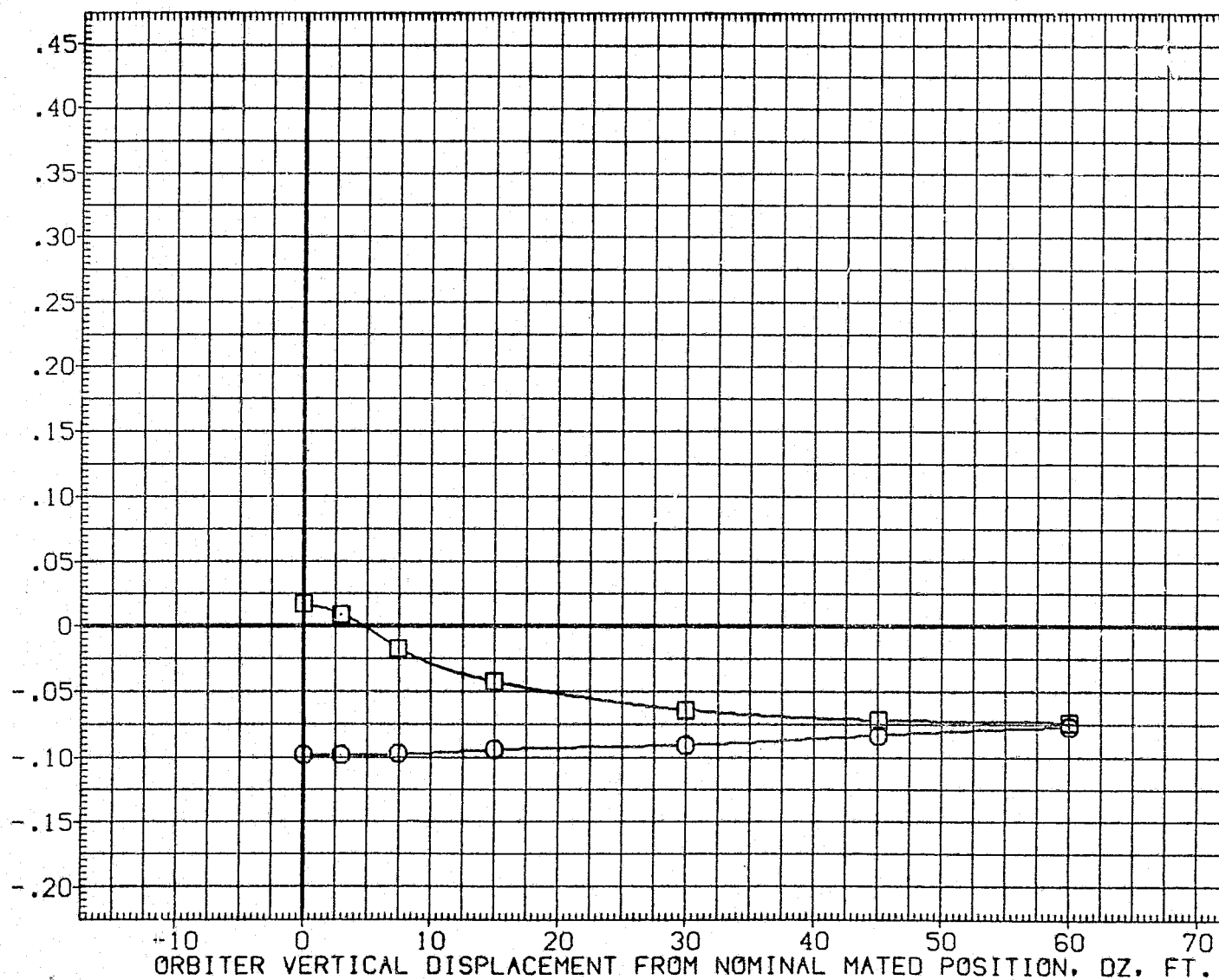


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA(MGN132)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	BETAC	.000	ELV-1B	.000
□	14.000	ELV-0B	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

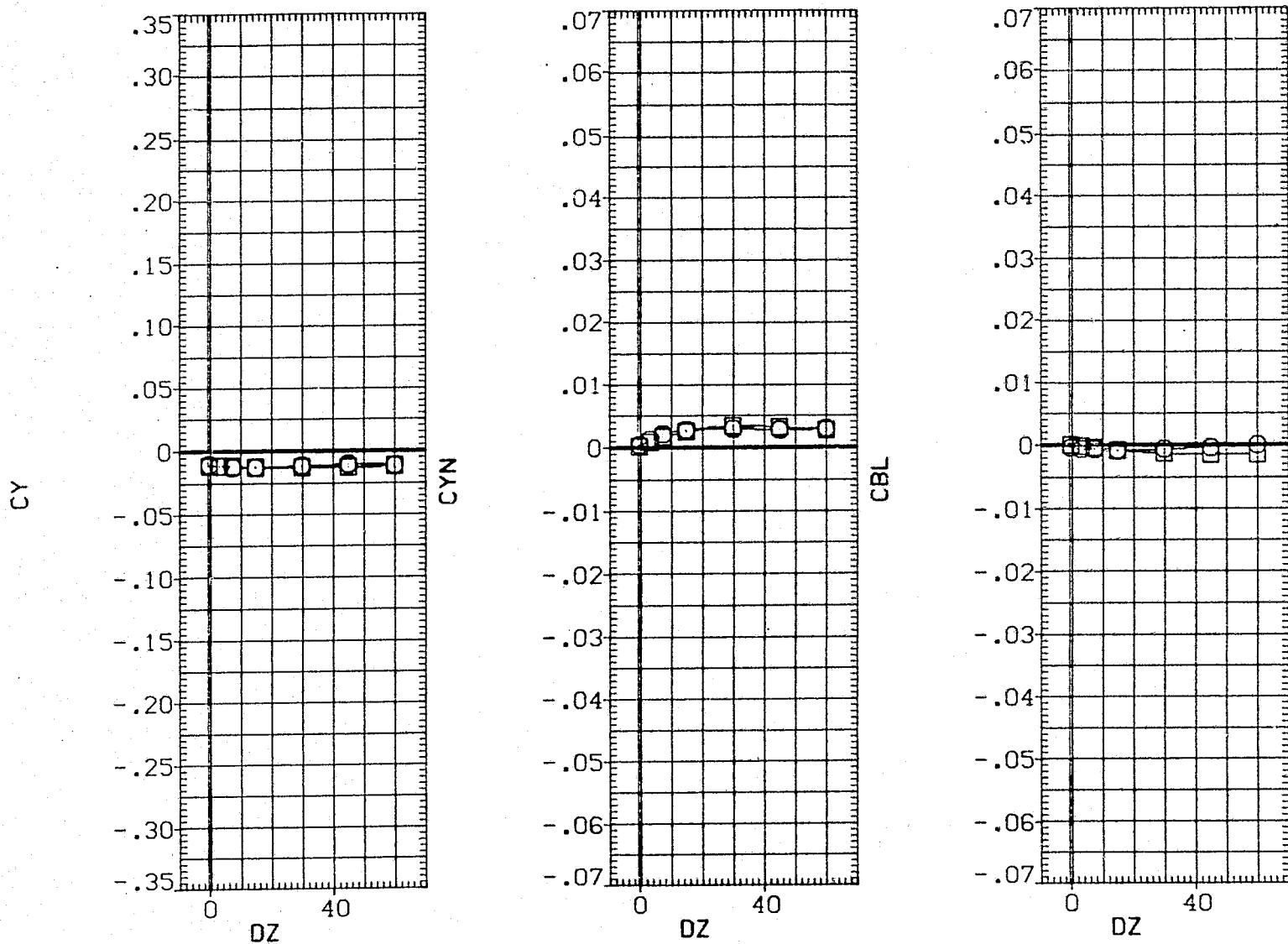


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN132)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	10.000		.000	ELV-1B .000
□	14.000	ELV-0B	3.000	ELEVON 5.000
		MACH	.600	BETA0 .000
		PHI	.000	DY .000
		DX	.000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

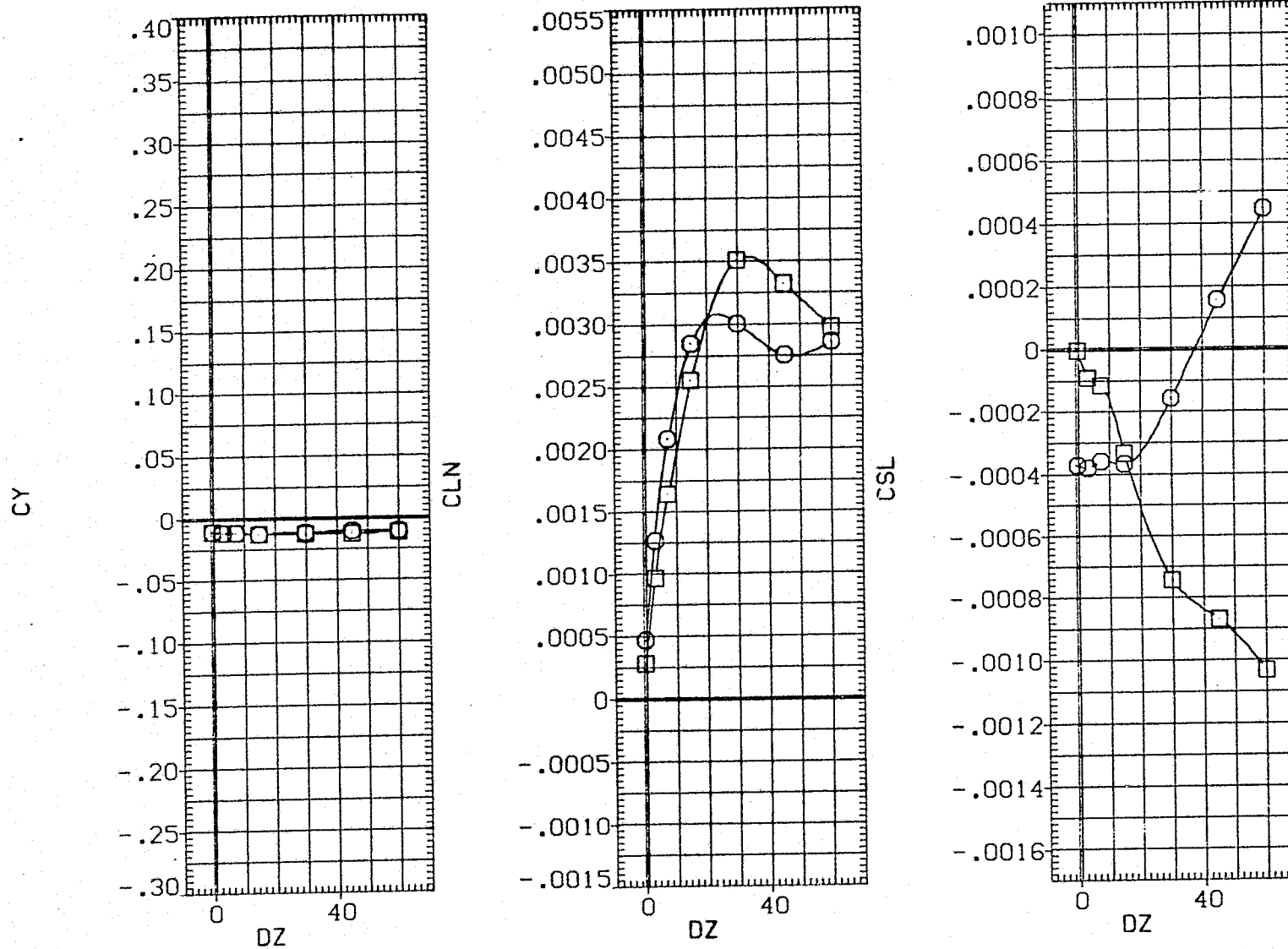


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (132 - 035) (UGN132)

SYMBOL

○
□

ALPHA0

10.000
14.000

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.8000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

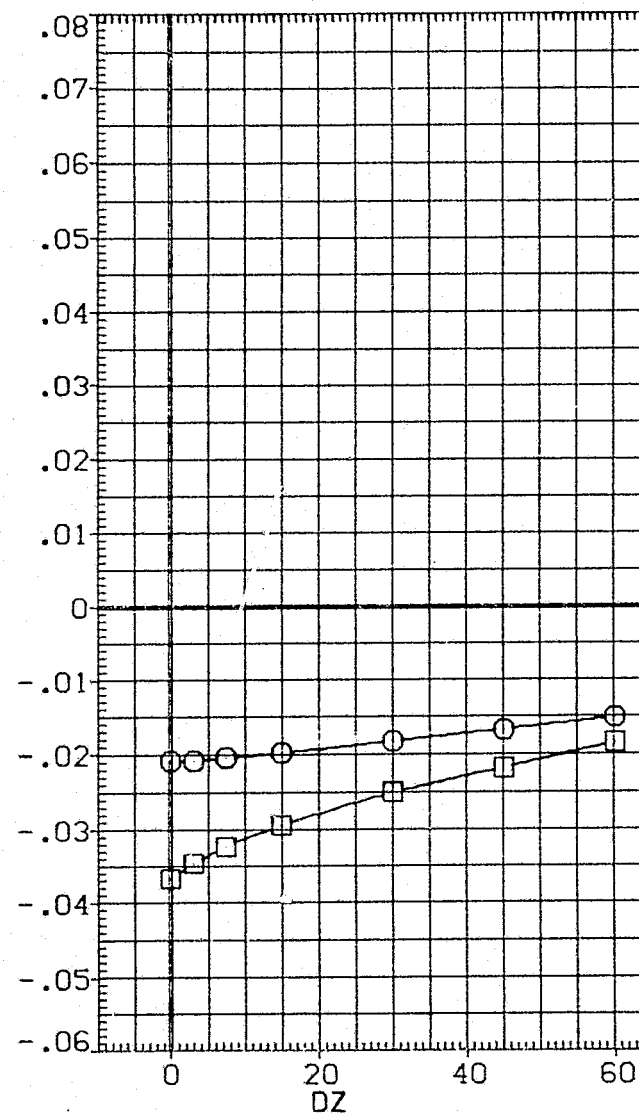
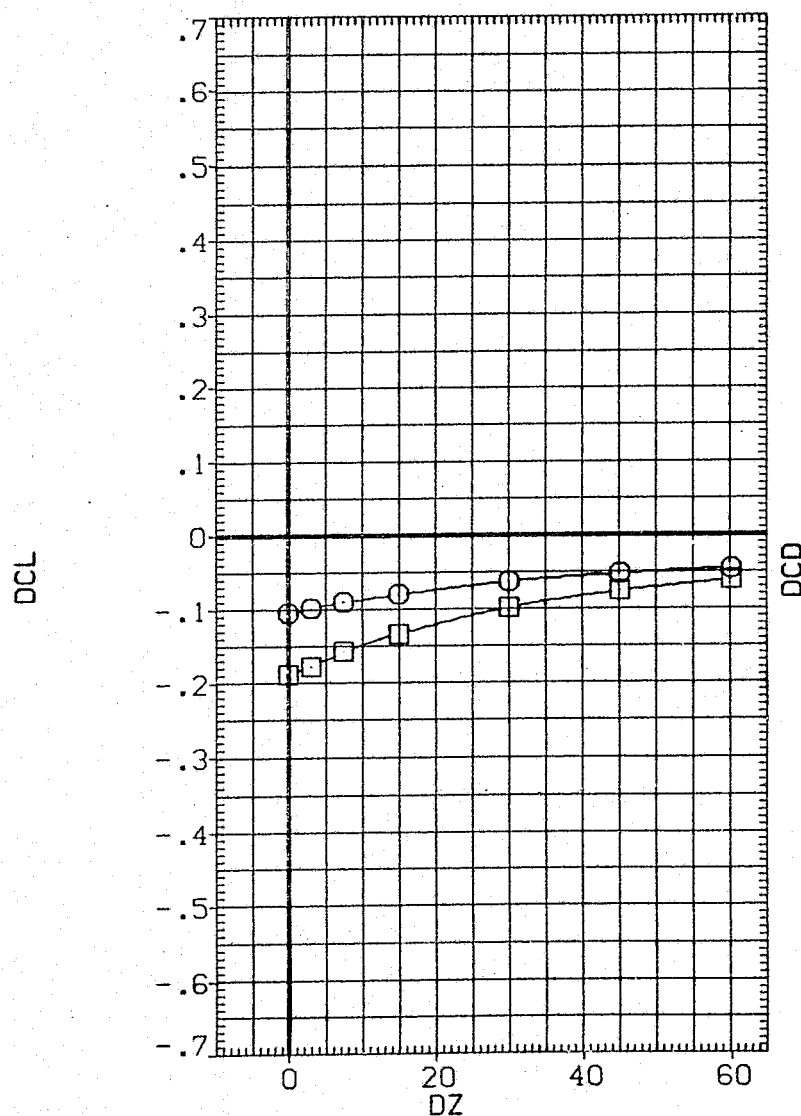


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 5500.0000

LREF 327.7800

BREF 2348.0400

XMRP 1339.9000

YMRP .0000

ZMRP 190.8000

SCALE .0300

SQ.FT.

IN.

IN.

IN.XC

IN.YC

IN.ZC

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

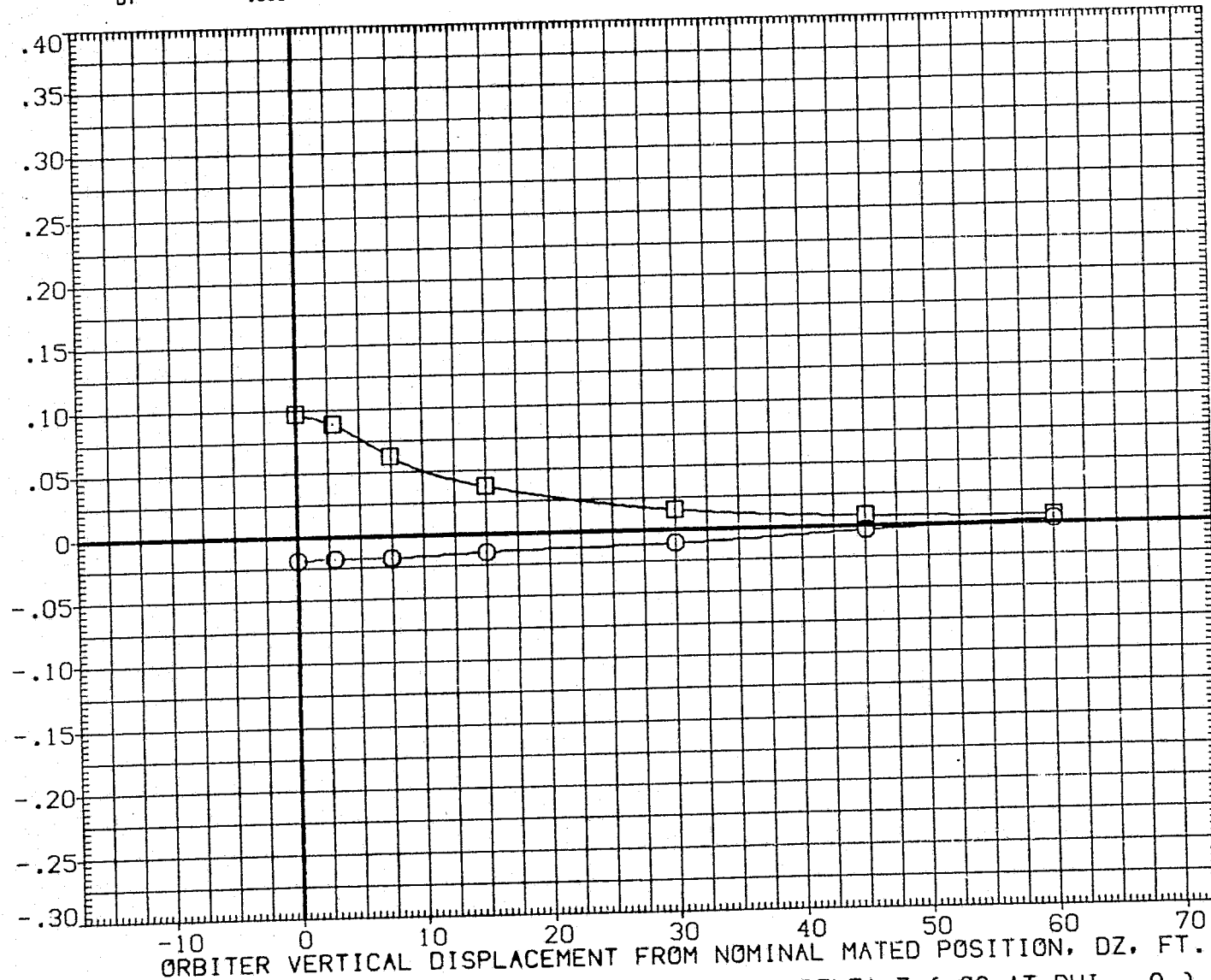


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (132 - 035)(UGN132)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

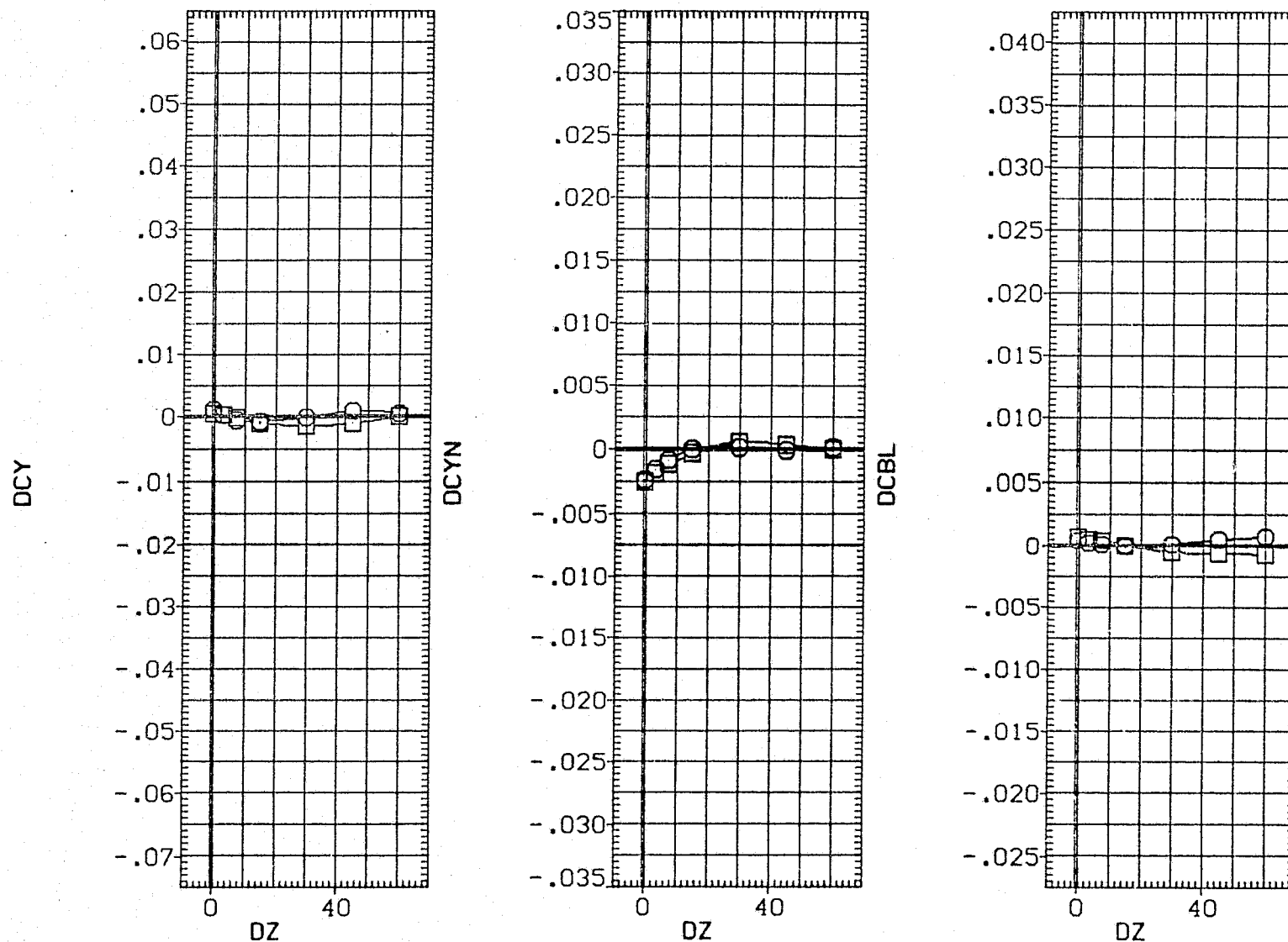


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC
○	10.000	ELV-18	8.000	.000
□	14.000	ELEVON	5.000	3.000
		PHI	.000	.600
		DY	.000	.000
		BETA0	.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

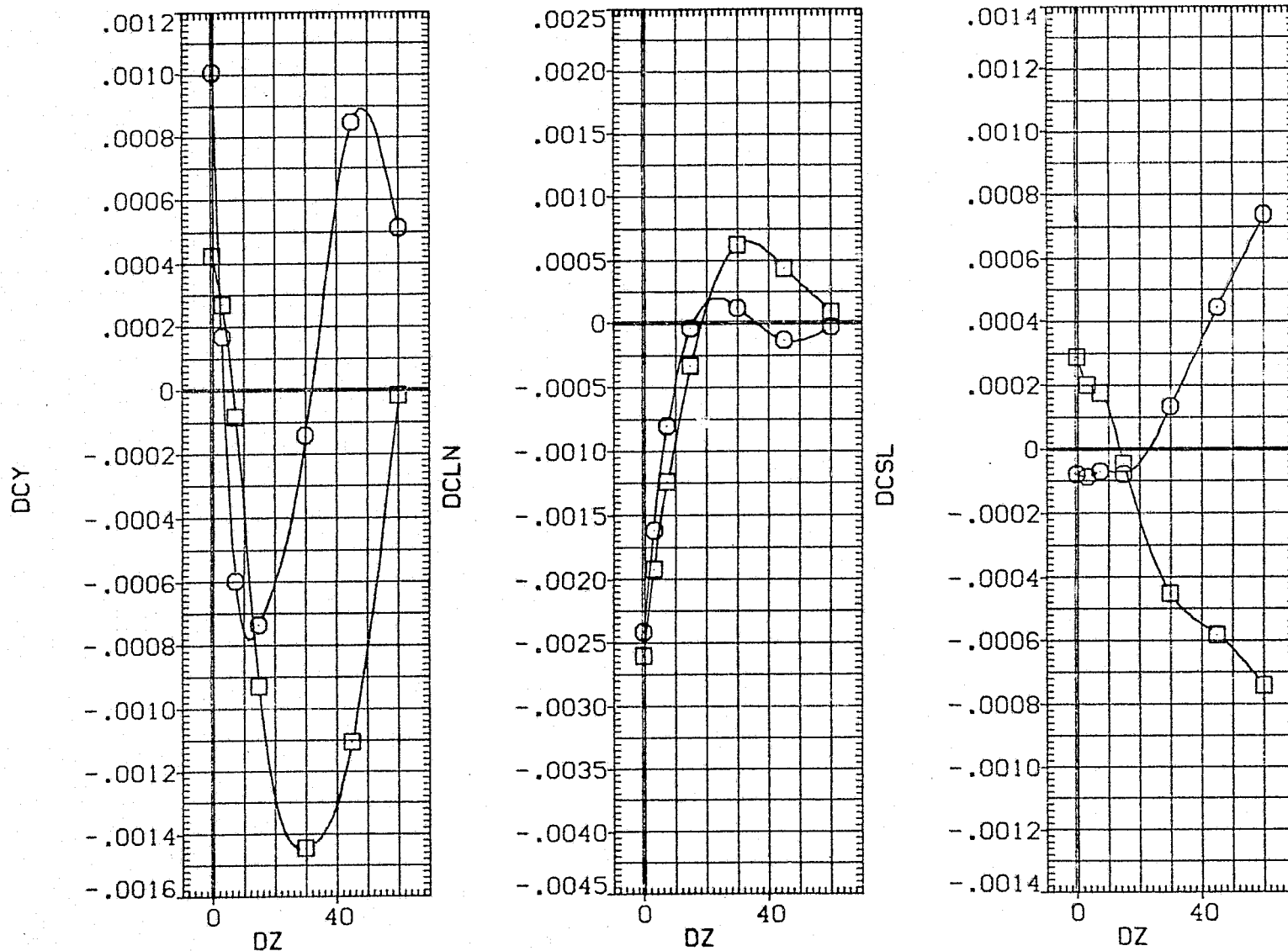


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA(MGN133)

SYMBOL	ALPHA		PARAMETRIC VALUES			
	10.000	BETAC	.000	ELV-1B	.000	
○	14.000	ELV-0B	3.000	ELEVON	5.000	
□		MACH	.600	BETA0	.000	
		PHI	.000	OY	.000	
		DX	10.000	ALPHAC	8.000	

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

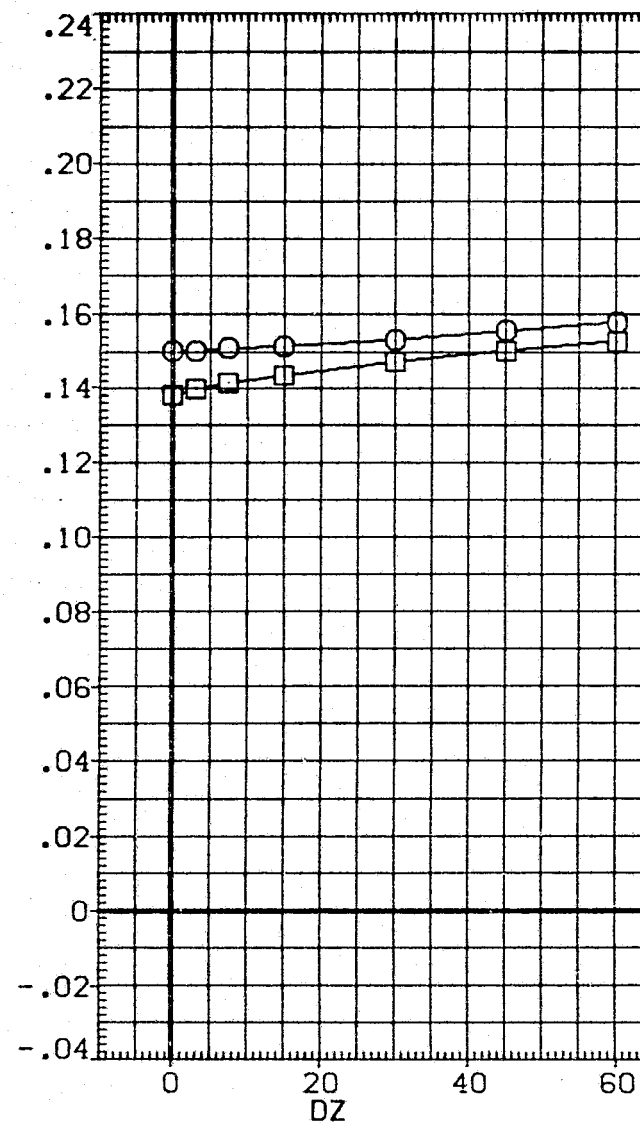
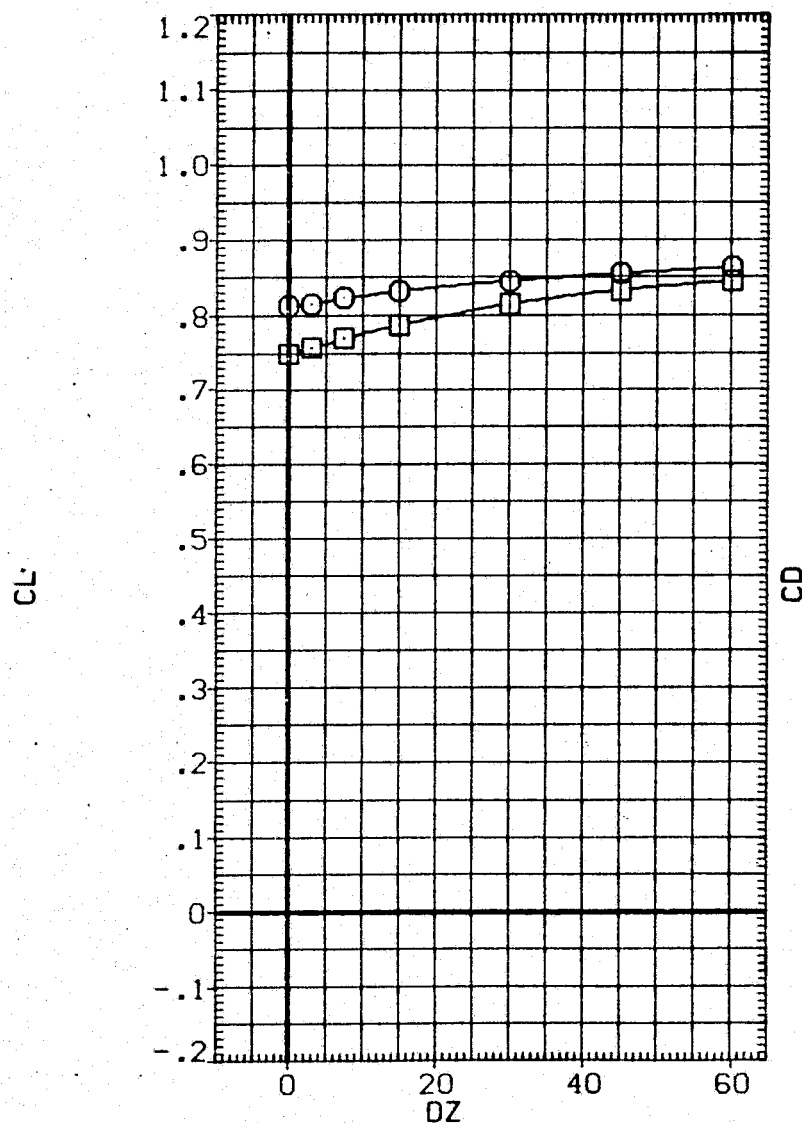


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL



ALPHA0

10.000

14.000

BETAC

ELV-08

MACH

PHI

DX

PARAMETRIC VALUES

.000

3.000

.600

.000

10.000

ELV-18

ELEVON

BETA0

DY

ALPHAC

.000

5.000

.000

.000

8.000

REFERENCE INFORMATION

SREF 5500.0000

LREF 327.7800

BREF 2348.0400

XMRP 1339.9000

YMRP .0000

ZMRP 190.8000

SCALE .0300

SQ.FT.

IN.

IN.

IN.XC

IN.YC

IN.ZC

PITCHING MOMENT COEFFICIENT, CLM

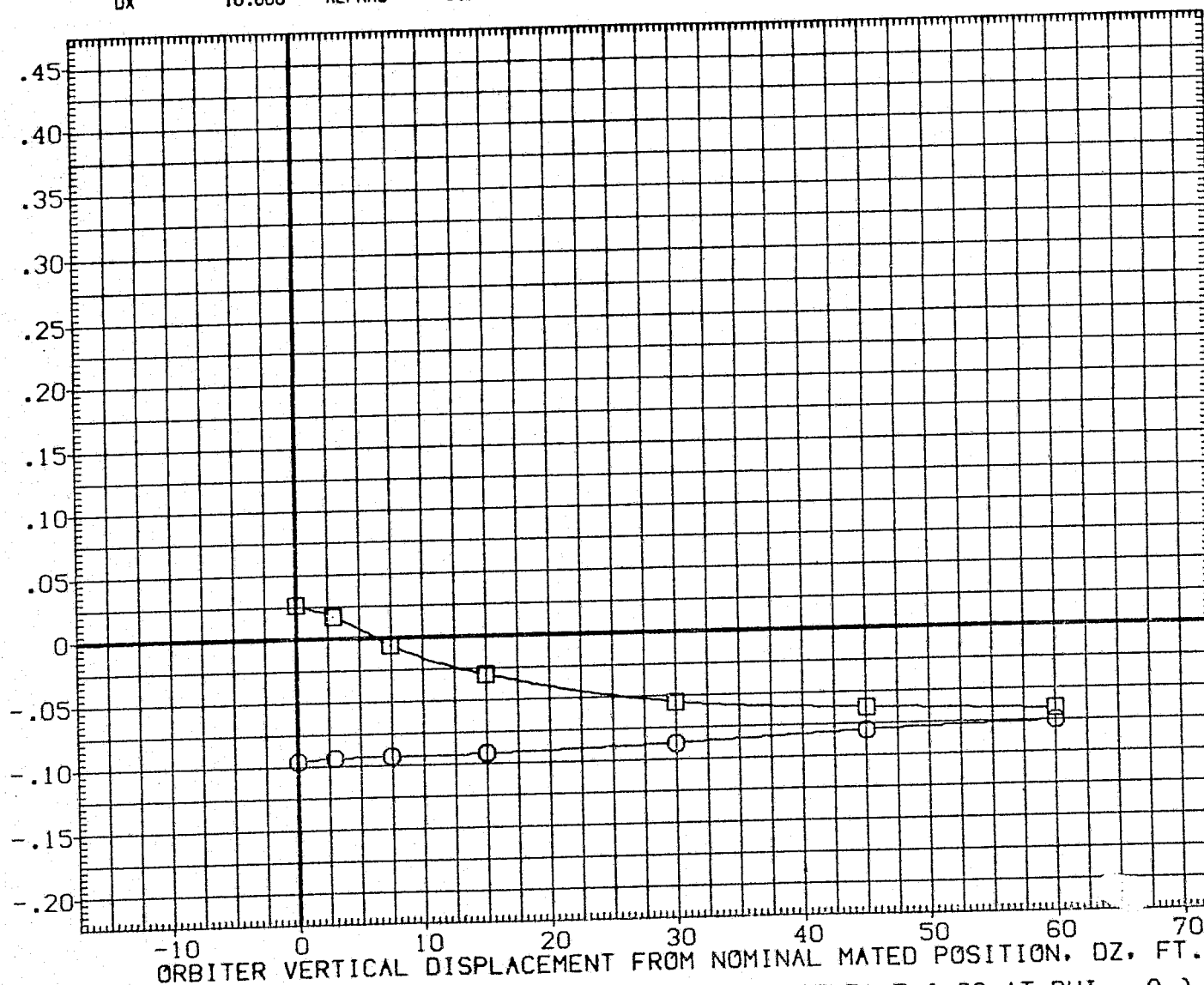


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN133)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	BETAC .000 ELV-18 .000
□	14.000	ELV-0B 3.000 ELEVON 5.000
		MACH .600 BETAO .000
		PHI .000 DY .000
		DX 10.000 ALPHAC 8.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

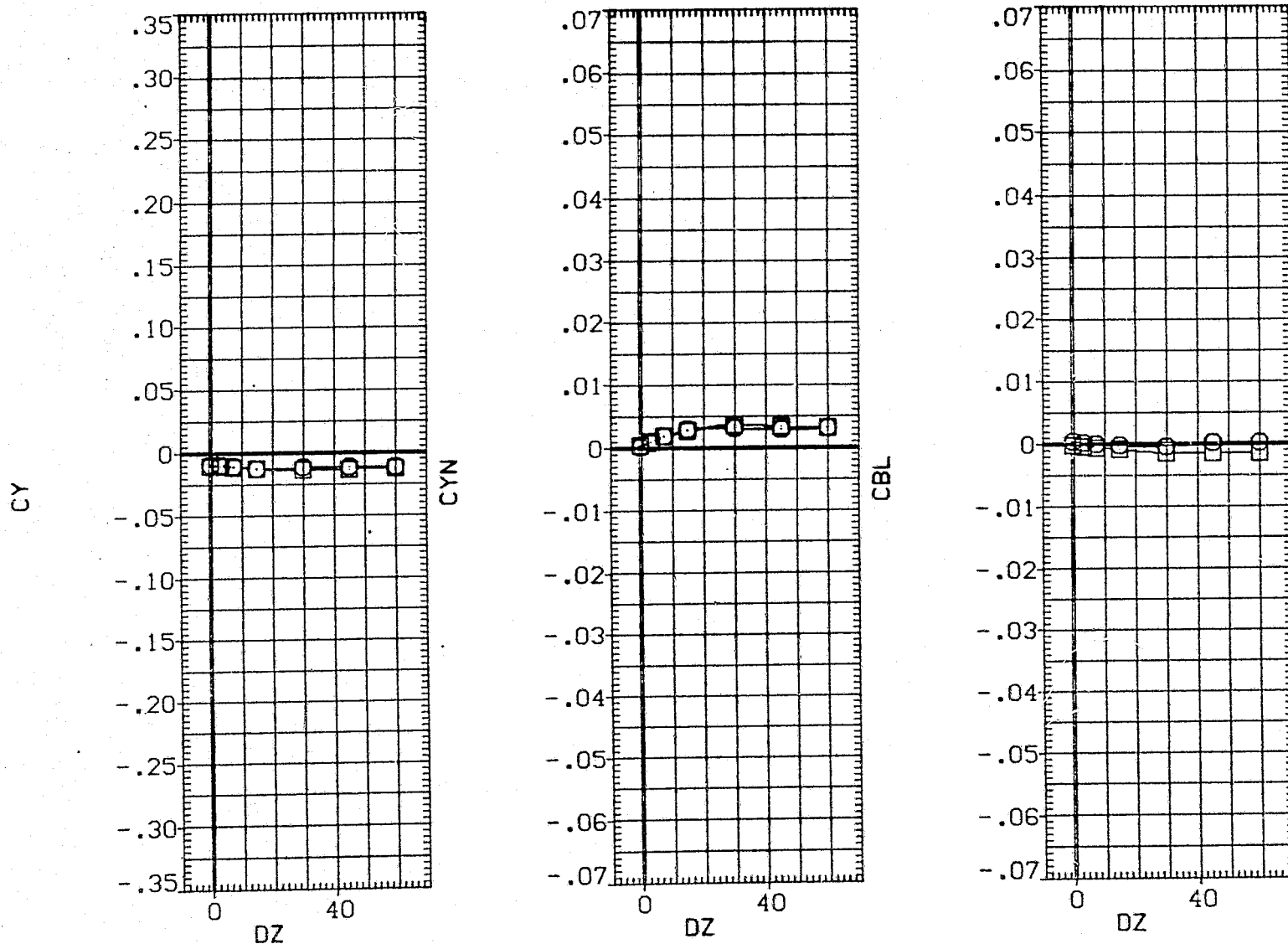


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (NEN133)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-1B	
○	10.000		.000	.000	
□	14.000	ELV-08	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

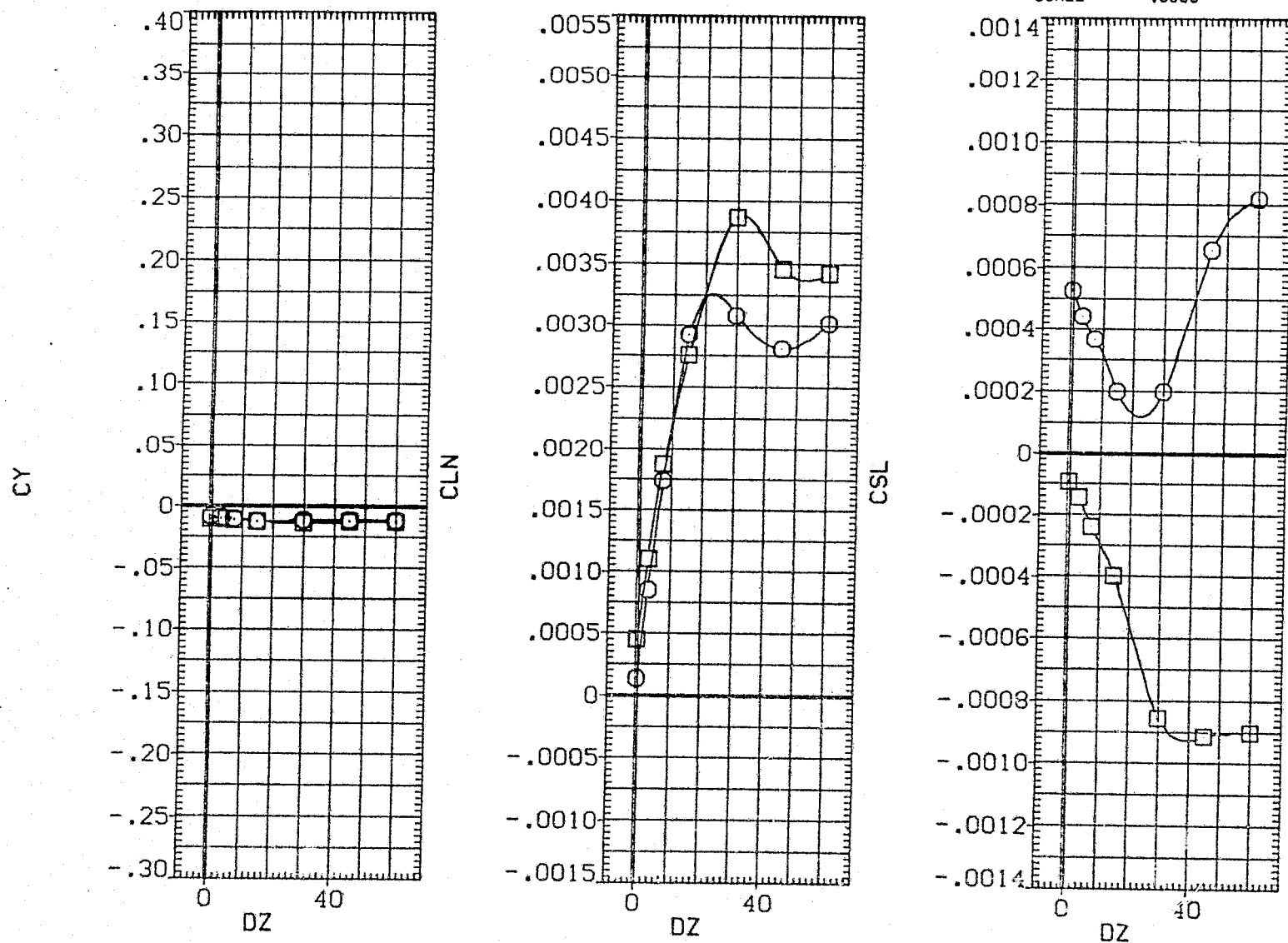


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (133 - 035) (UGN133)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

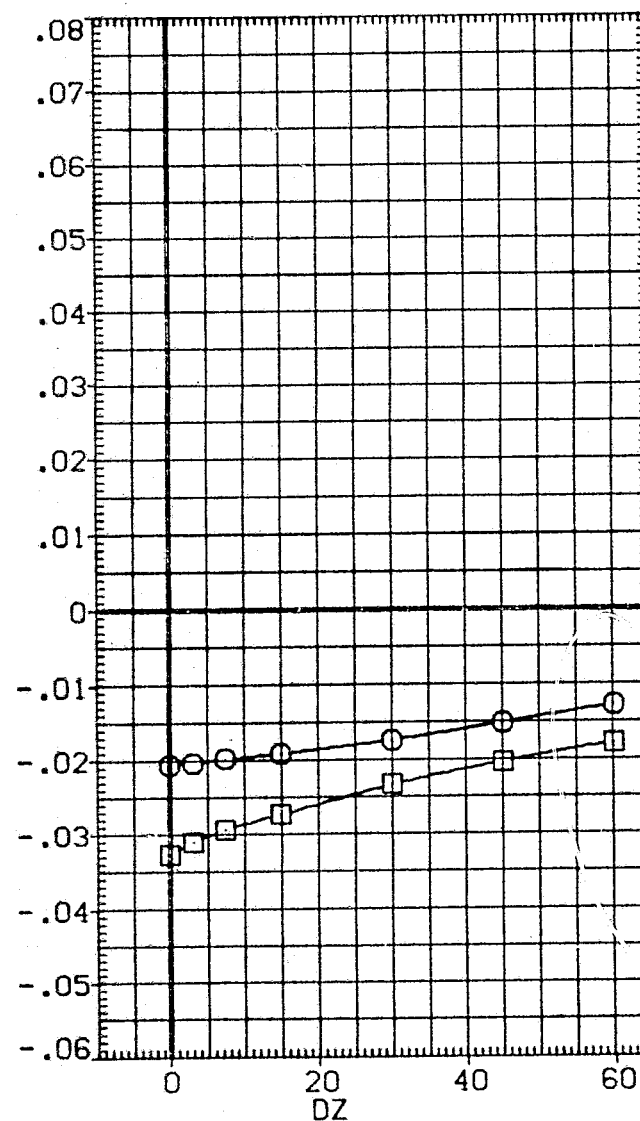
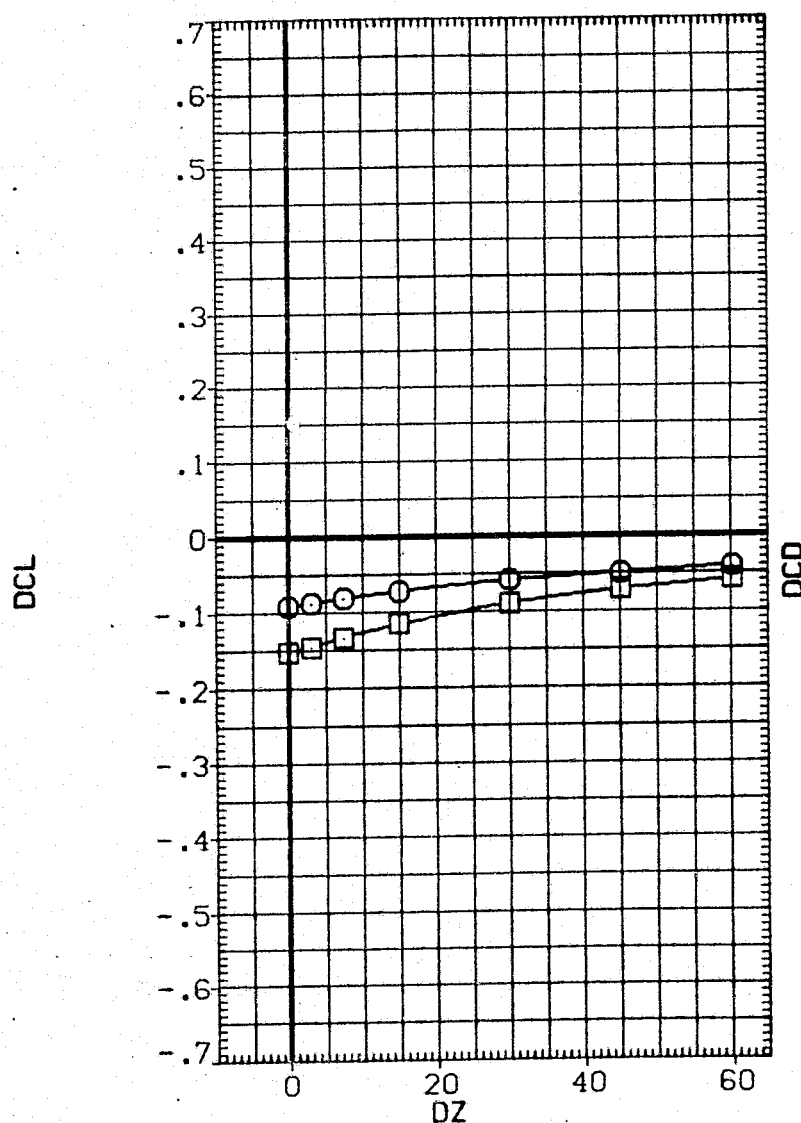


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF

5500.0000

50.FT.

LREF

327.7800

IN.

BREF

2348.0400

IN.

XMRP

1339.9000

IN.XC

YMRP

.0000

IN.YC

ZMRP

190.8000

IN.ZC

SCALE

.0300

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

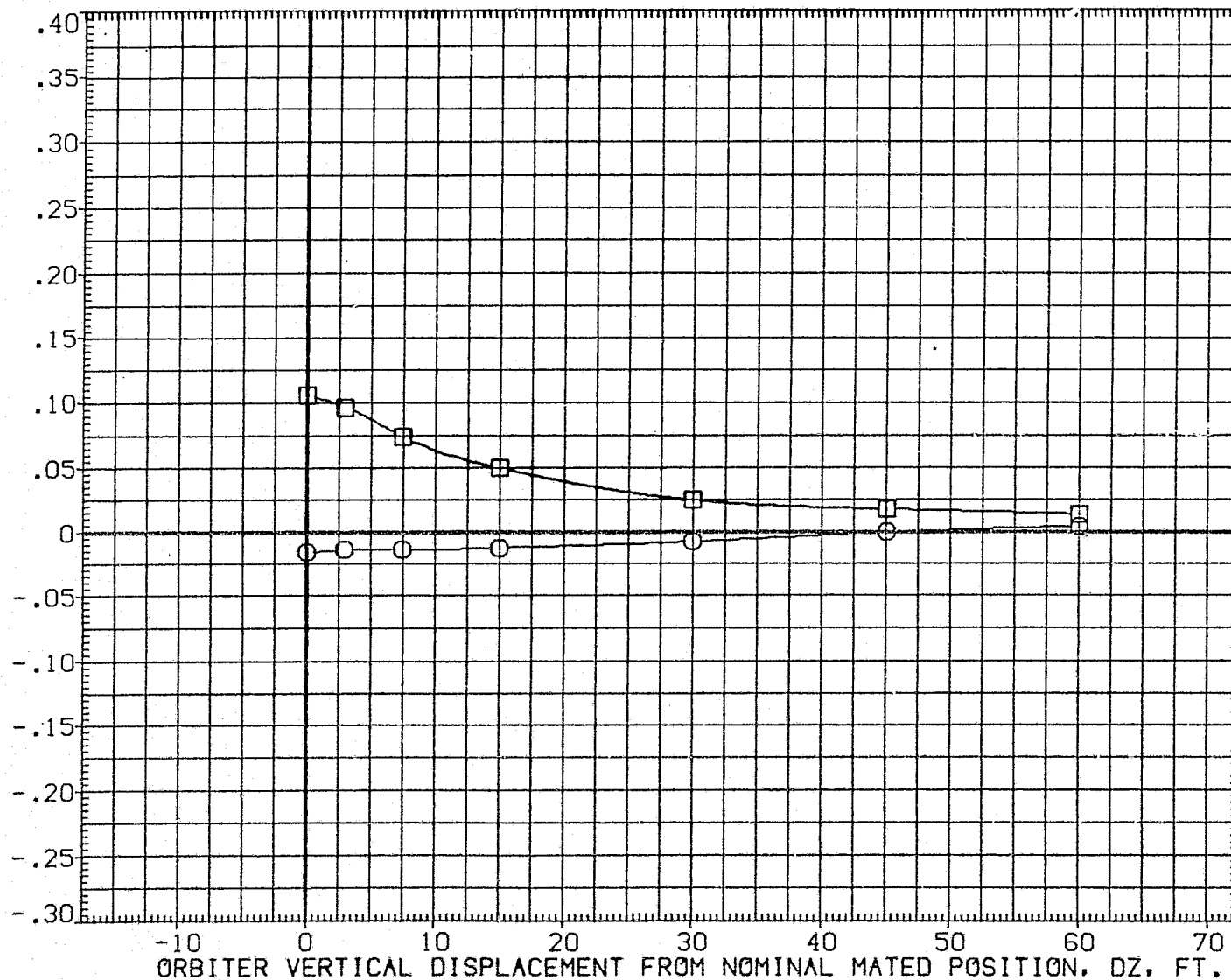


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (133 - 035) (UGN133)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

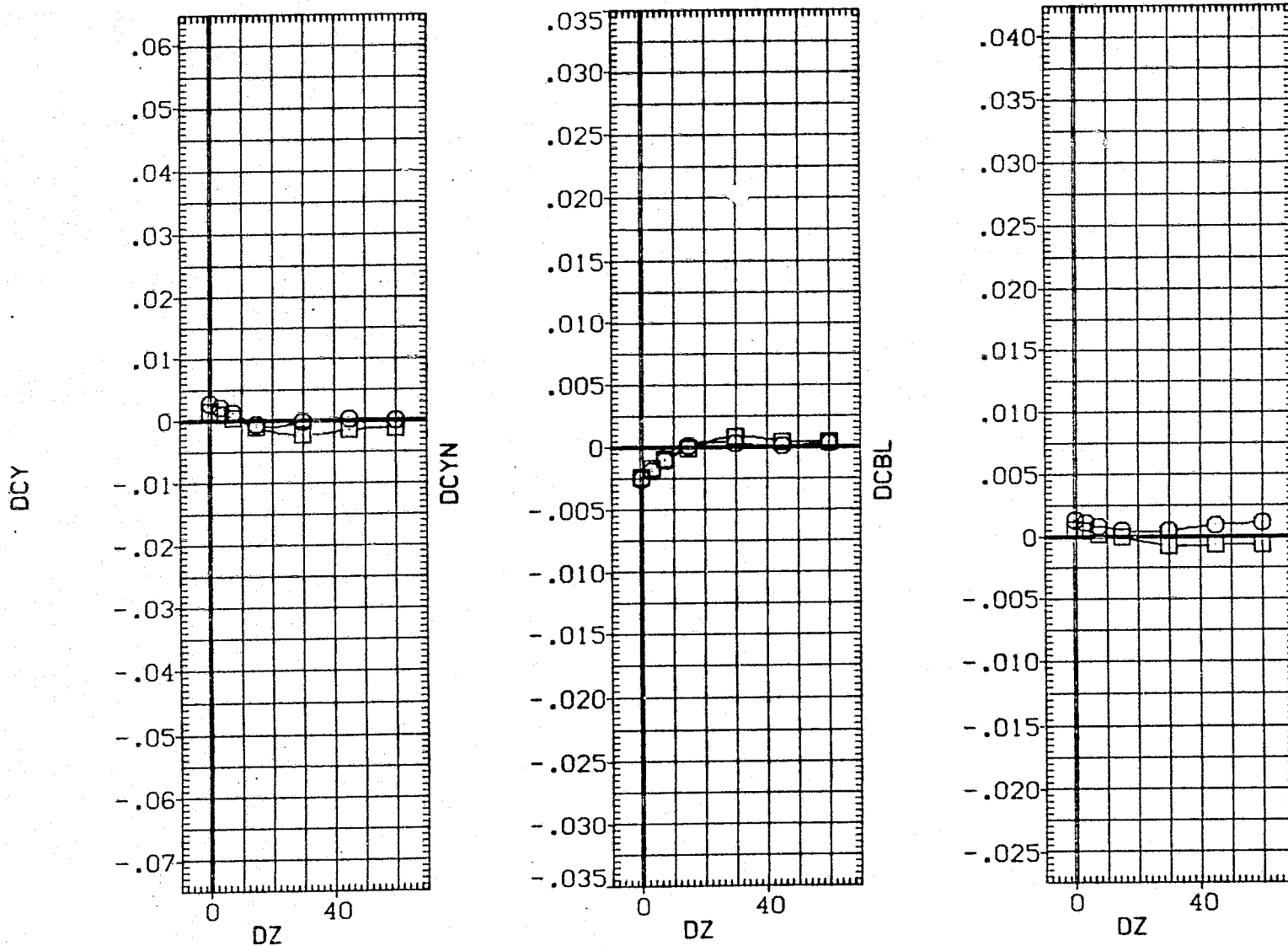


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

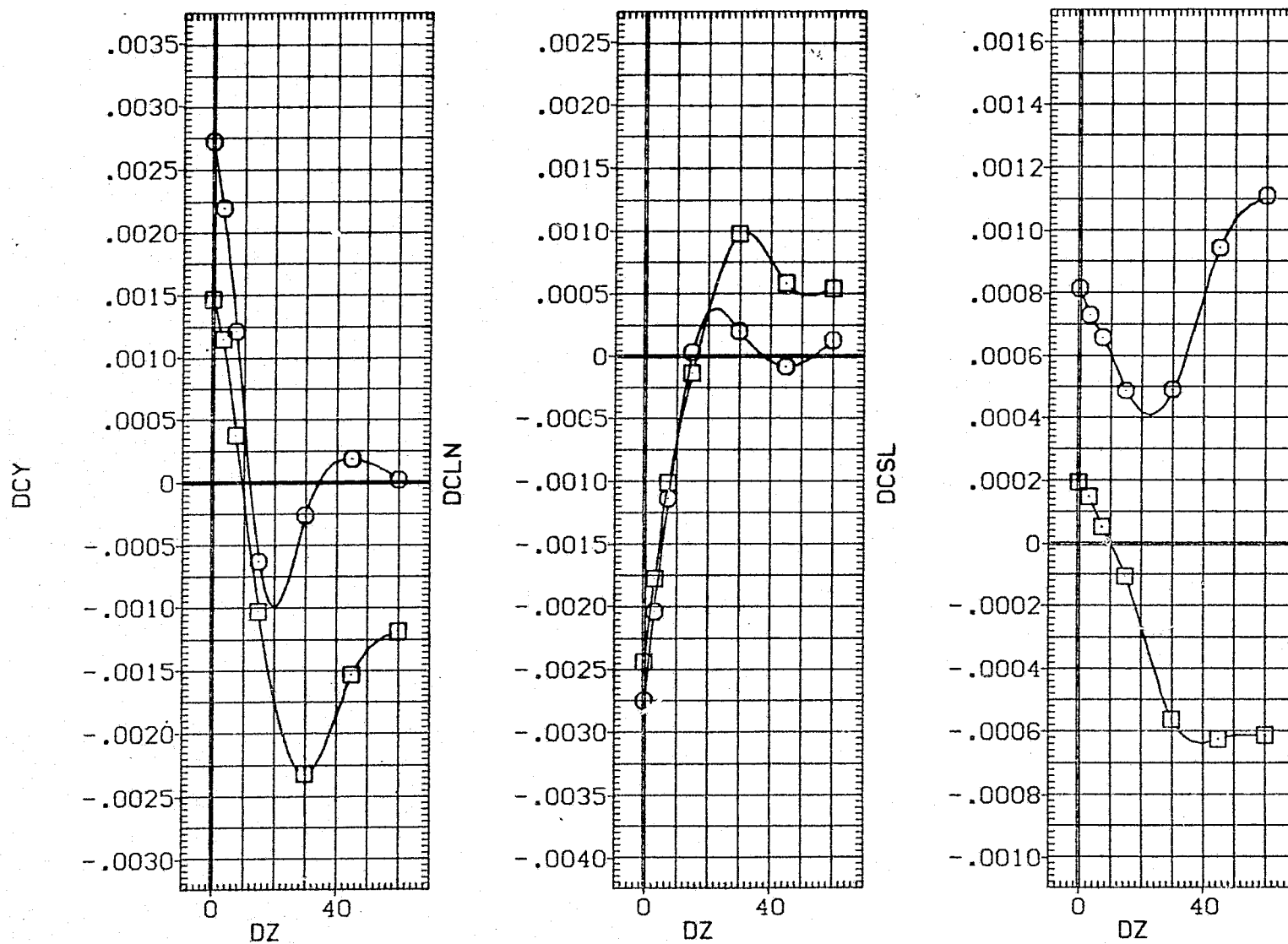


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN134)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	BETAC	.000	ELV-IB	.000
□	14.000	ELV-OB	3.000	ELEVON	5.000
		MACH	.600	BETAD	.000
		PHI	.000	DY	.000
		DX	20.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

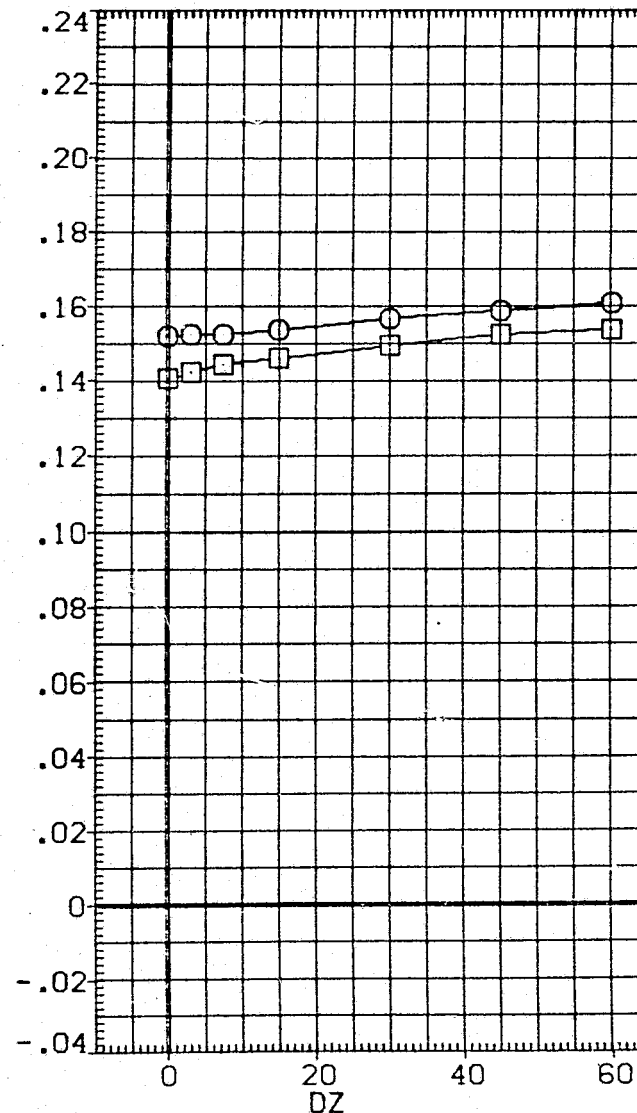
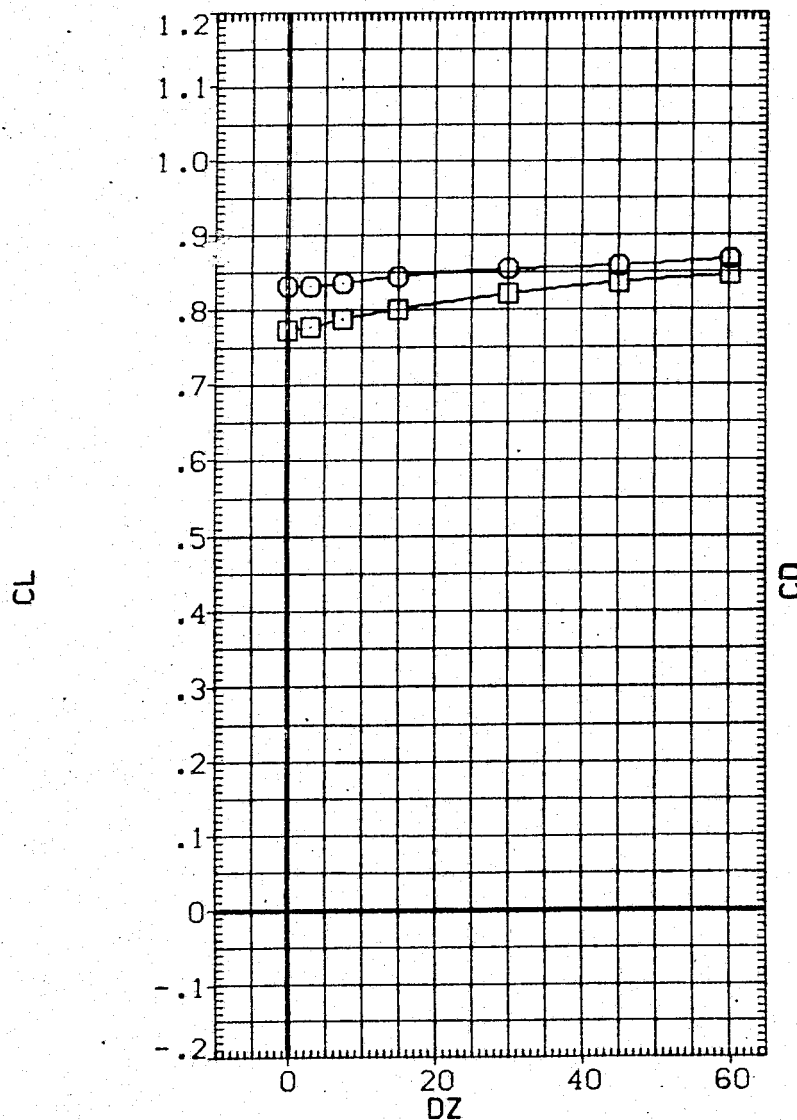


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	BETAC	.000	ELV-1B	.000	
○	14.000	ELV-0B	3.000	ELEVON	5.000	
□		MACH	.600	BETA0	.000	
		PHI	.000	DY	.000	
		DX	20.000	ALPHAC	8.000	

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

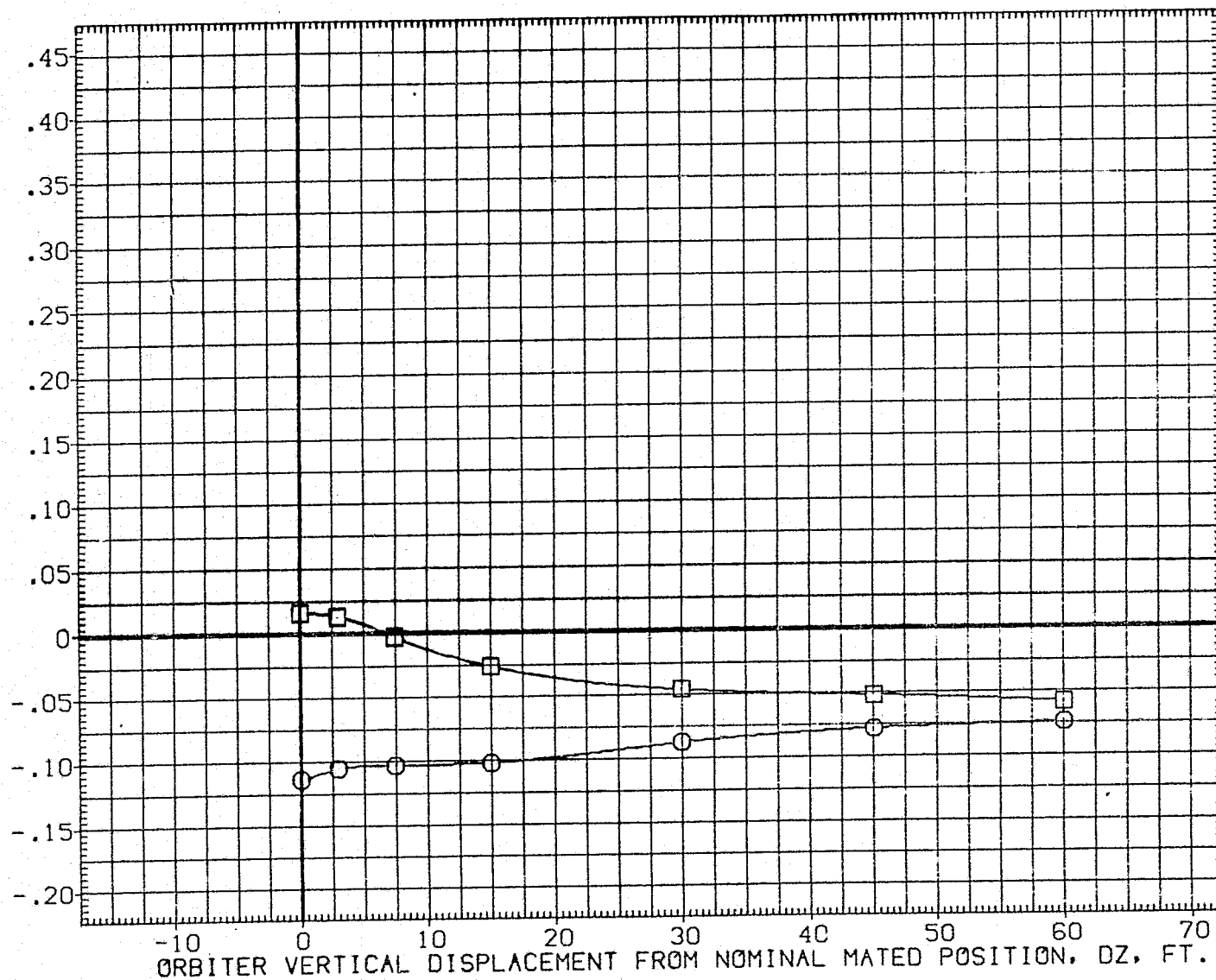


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN134)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-18
○	10.000	BETAC	.000	.000
□	14.000	ELV-08	3.000	5.000
		MACH	.600	.000
		PHI	.000	.000
		DX	20.000	ALPHAC
				8.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

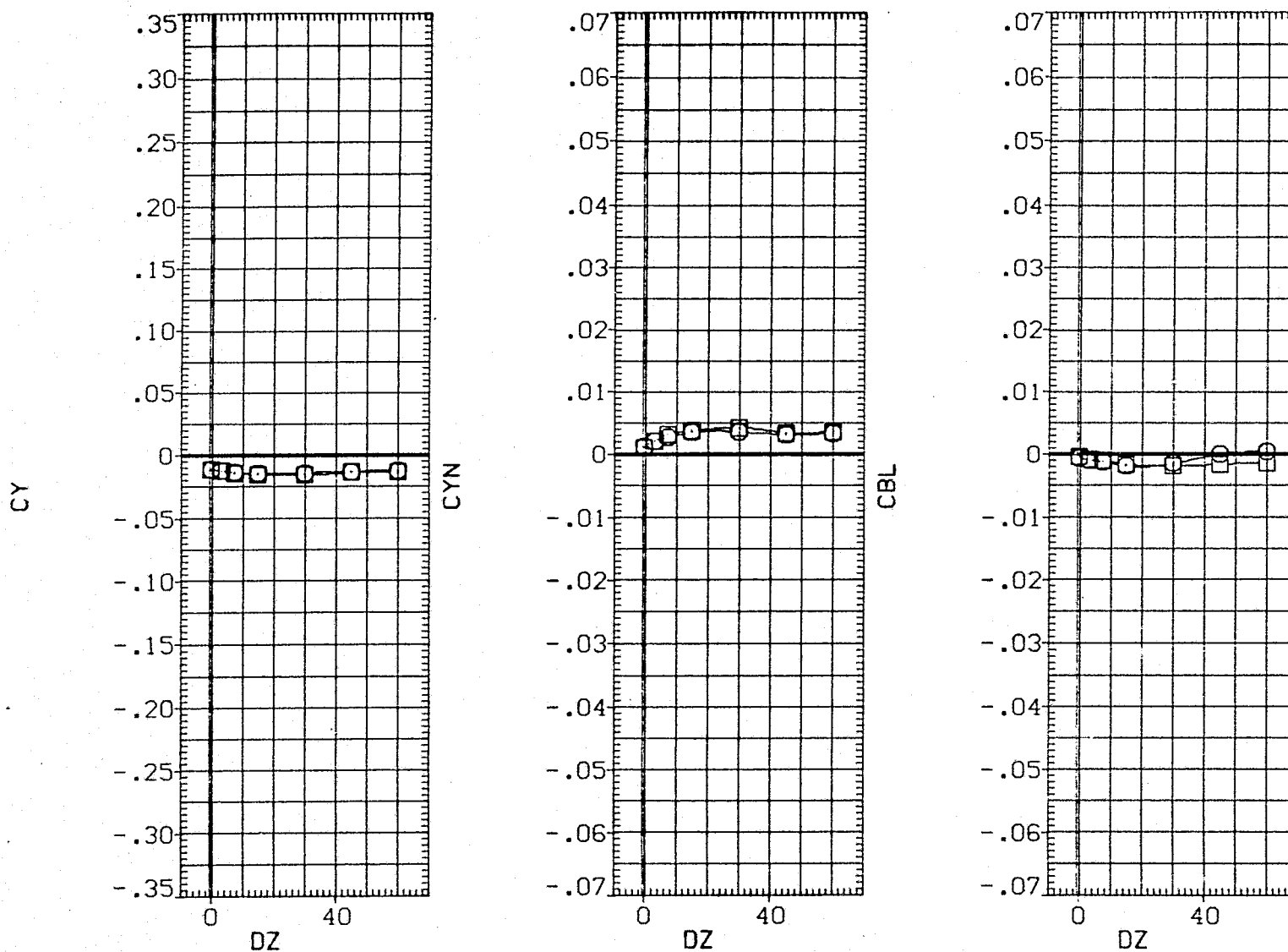


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES	
	10.000	BETAC	.000	ELV-1B
○	14.000	ELV-0B	3.000	ELEVON
□		MACH	.600	BETA0
		PHI	.000	DY
		DX	20.000	ALPHAC
				8.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

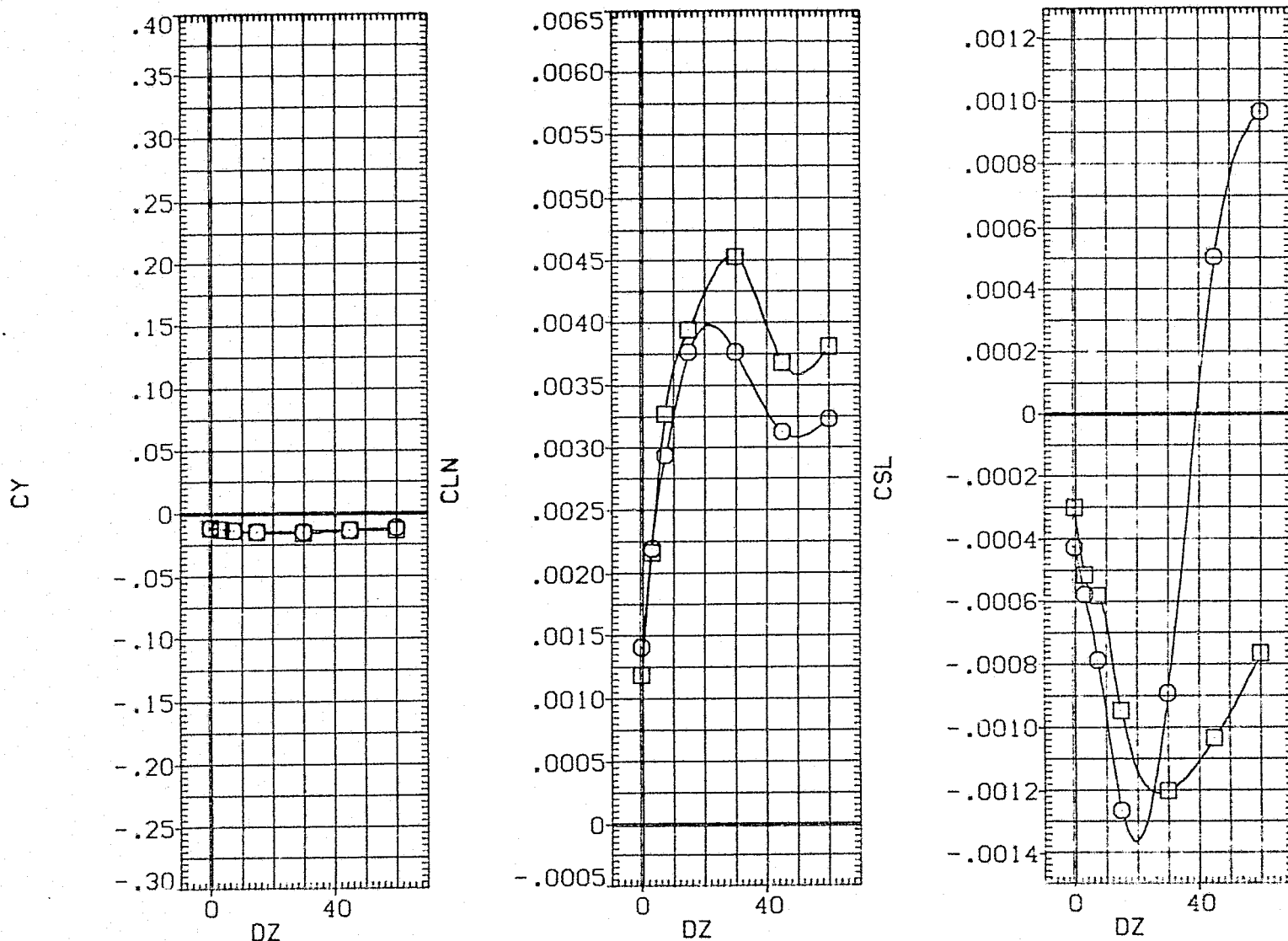


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (134 - 035) (UGN134)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 20.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	5500.0000	SD.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

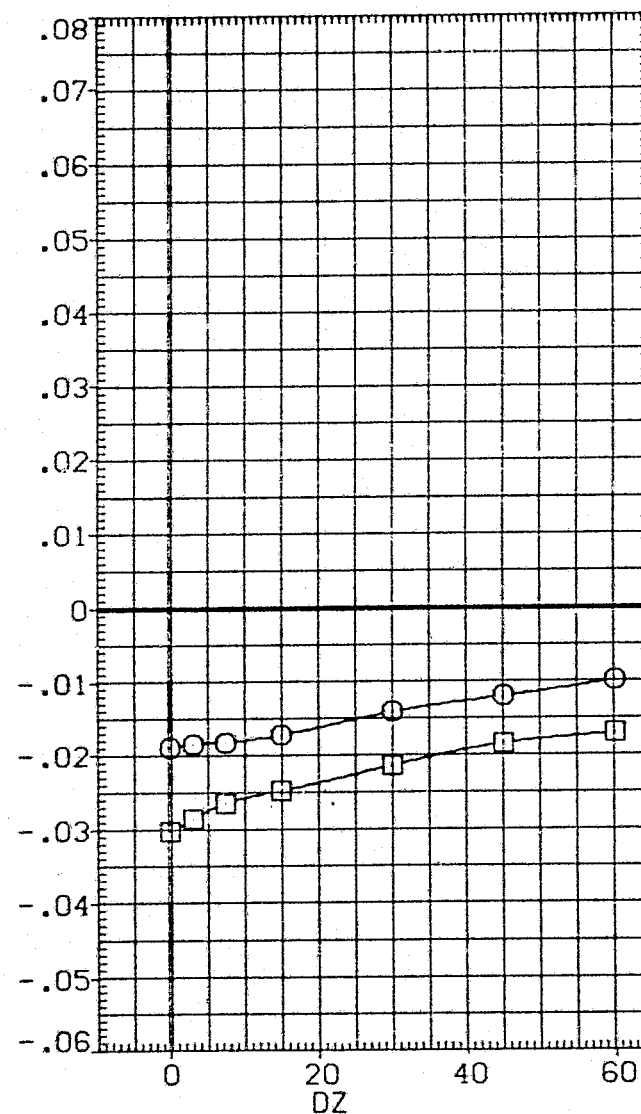
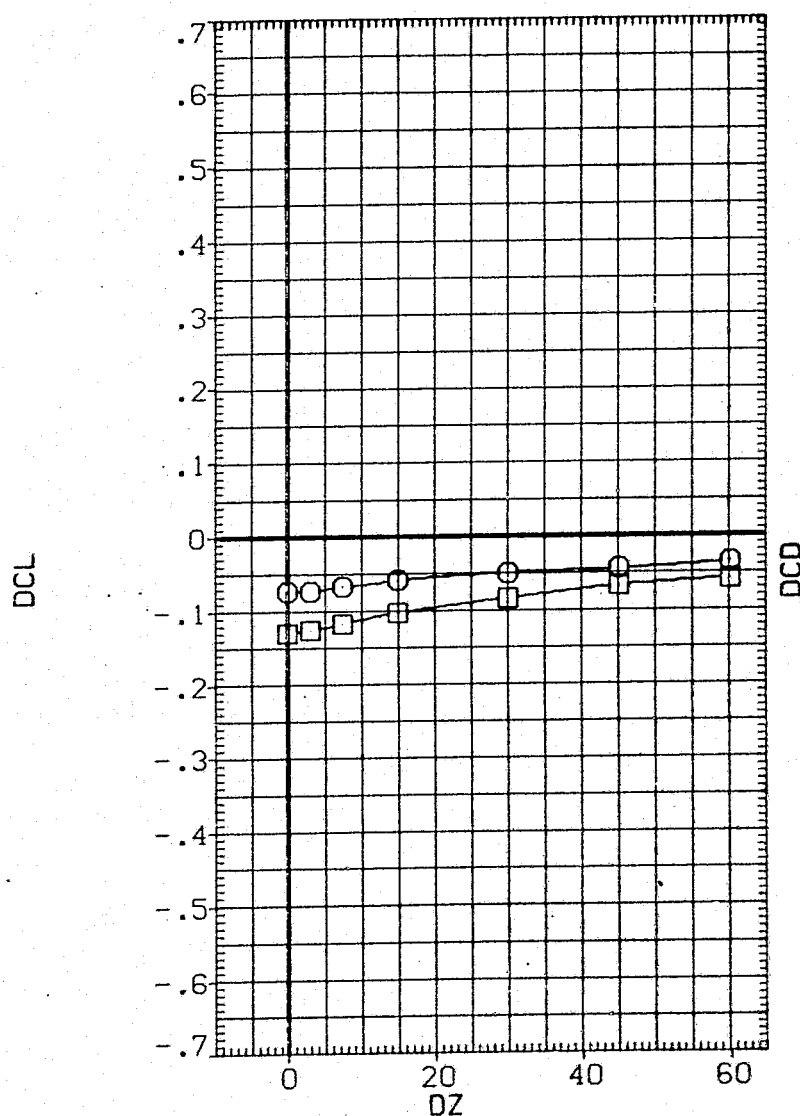


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
AMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

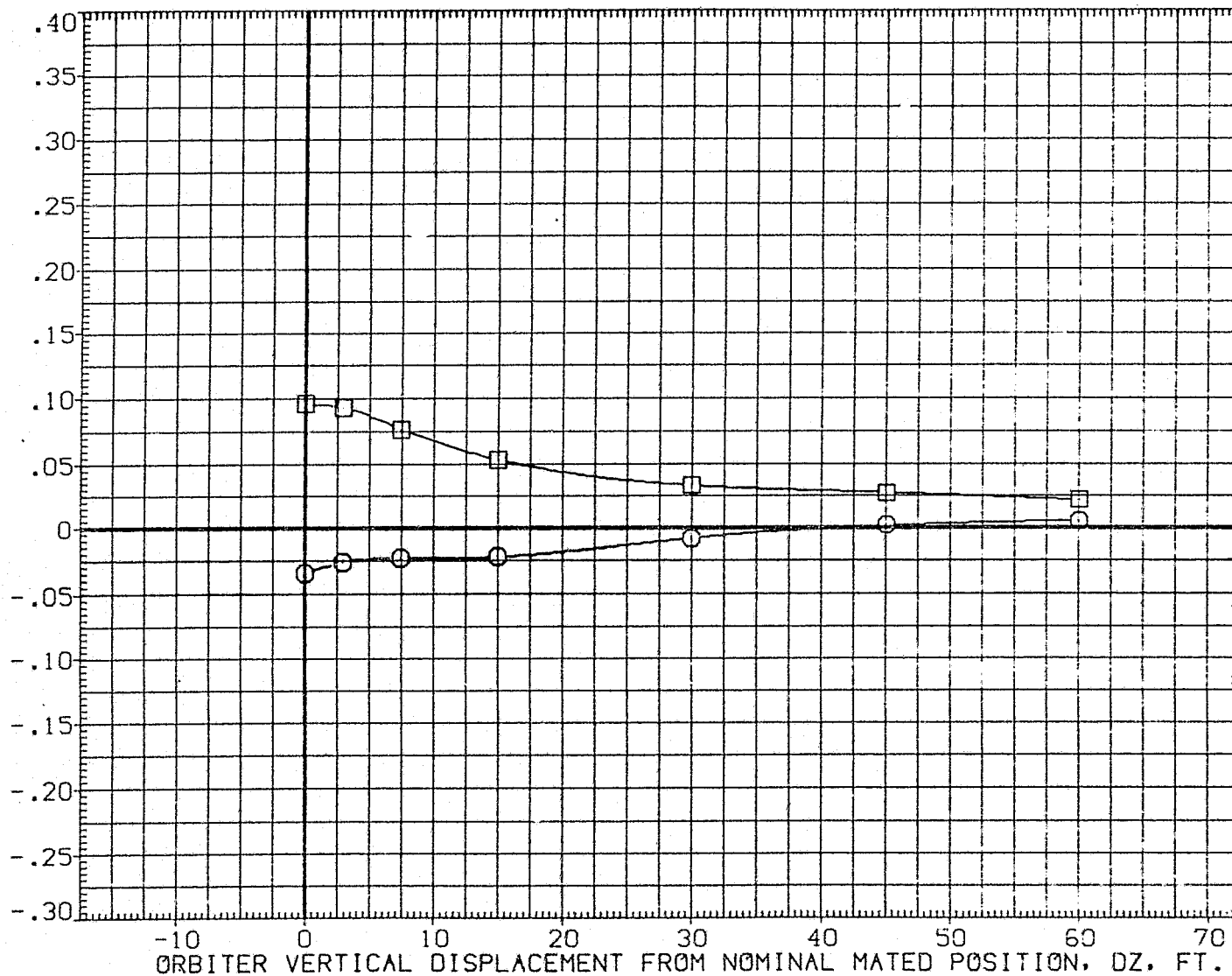


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (134 - 035) (UGN134)

SYMBOL	ALPHAD	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

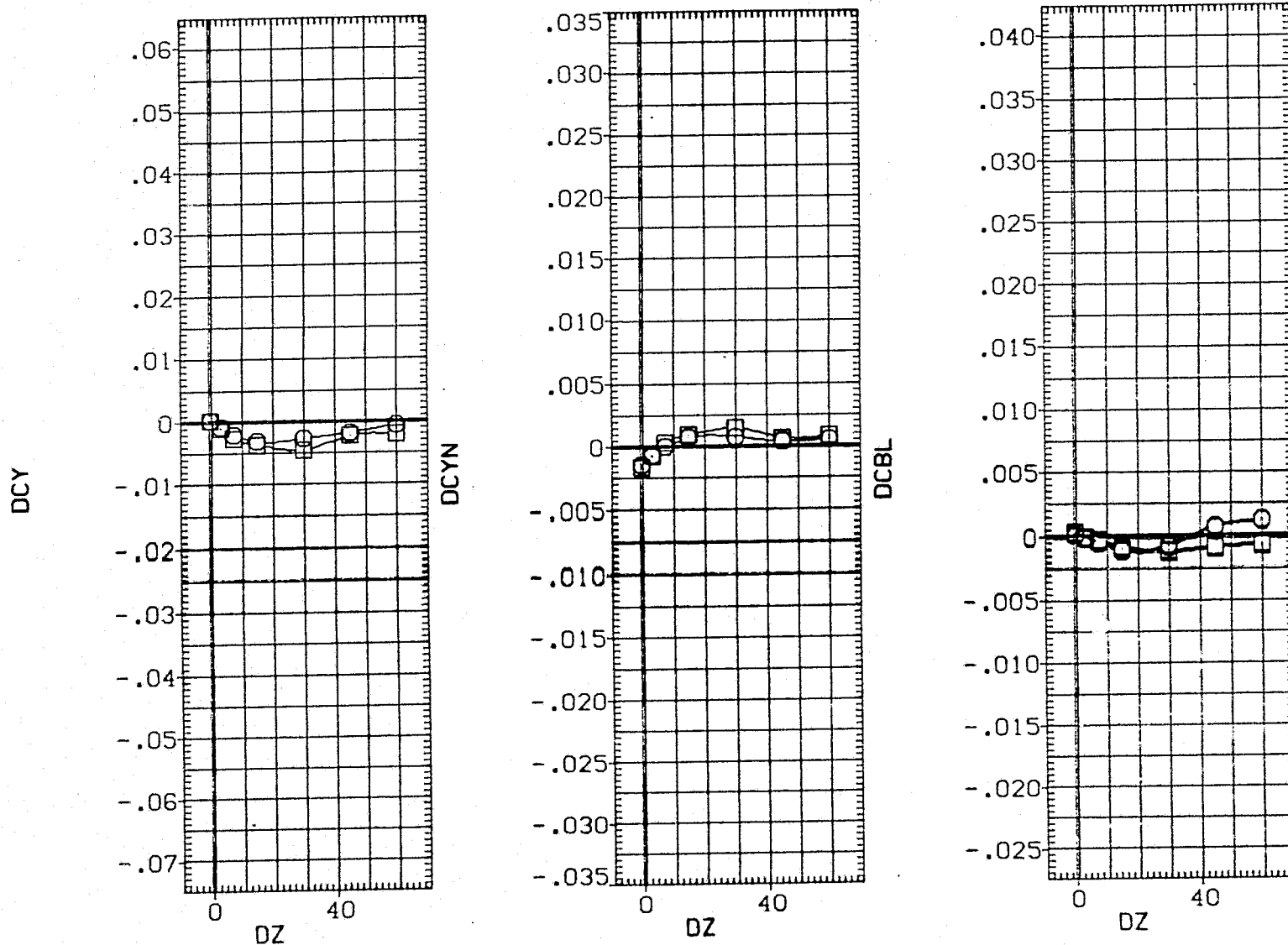


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 8.000	BETAC .000
□	14.000	ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		PHI .000	DX 20.000
		DY .000	BETA0 .000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRF	1339.9000	IN.XC
YMRF	.0000	IN.YC
ZMRF	190.8000	IN.ZC
SCALE	.0300	

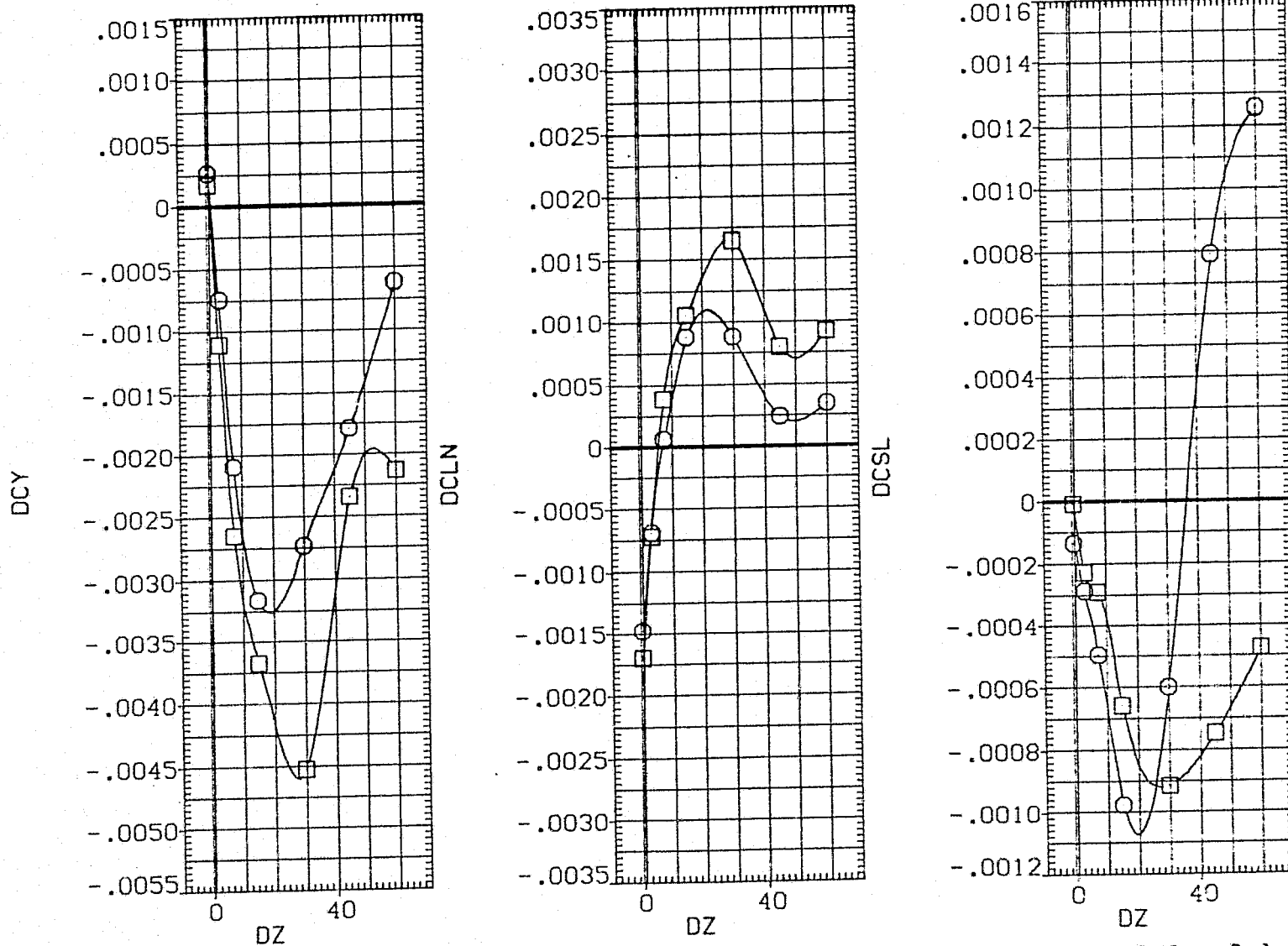


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN137)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

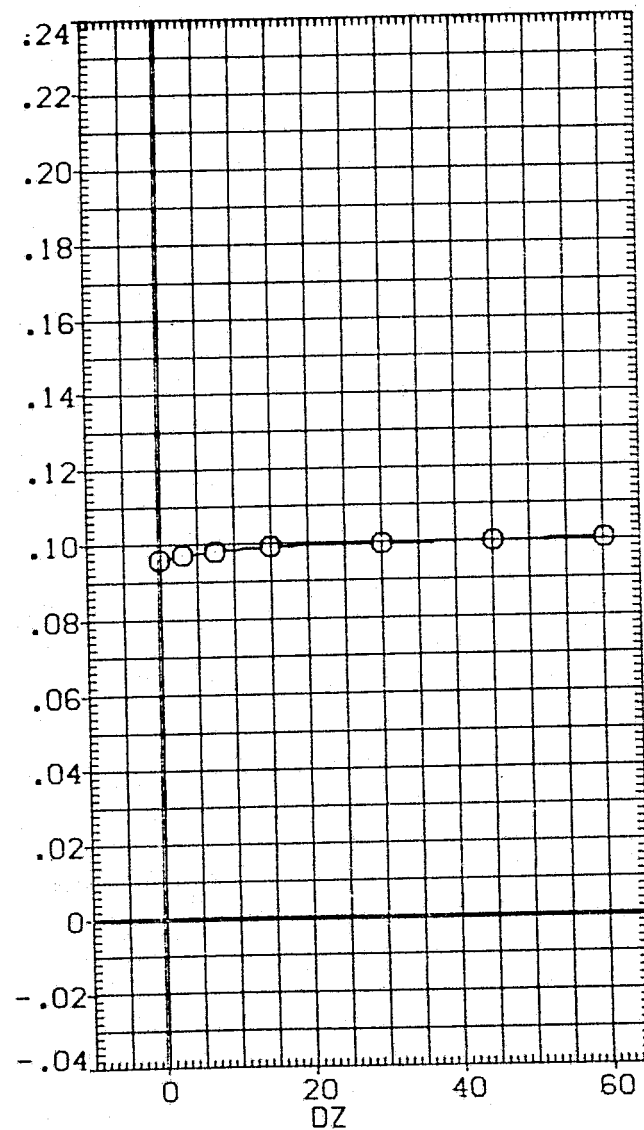
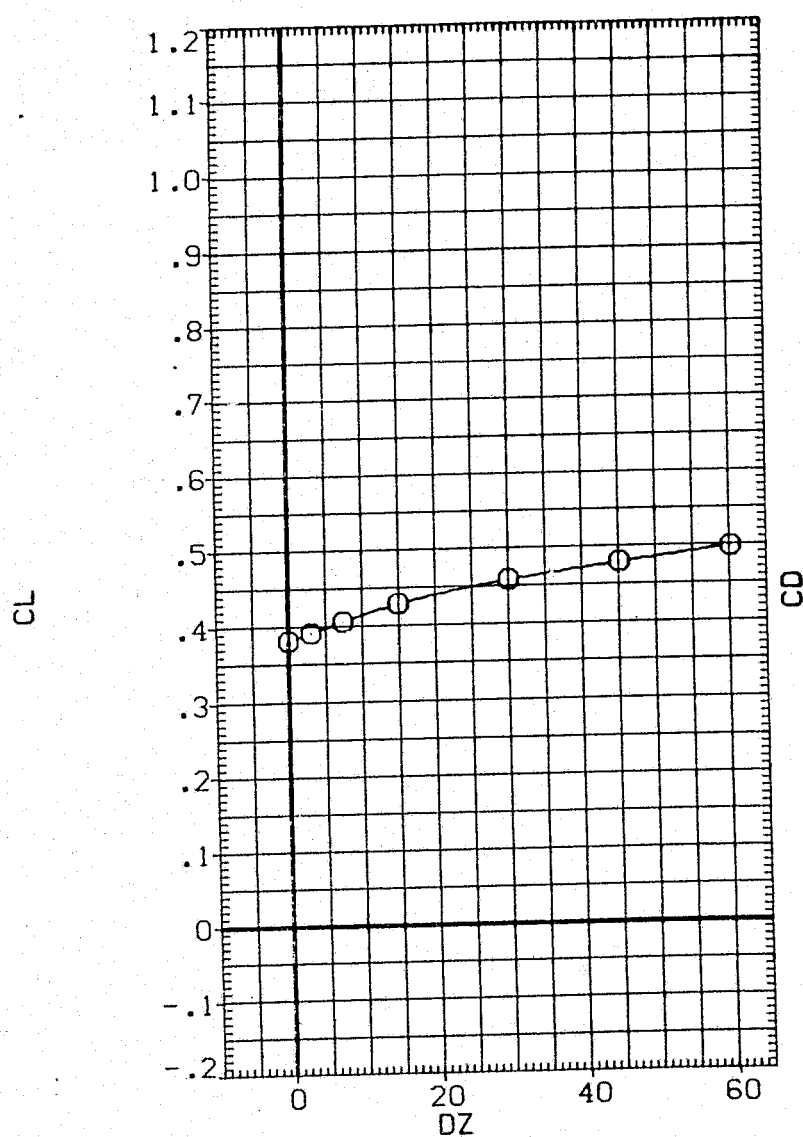


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN137)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

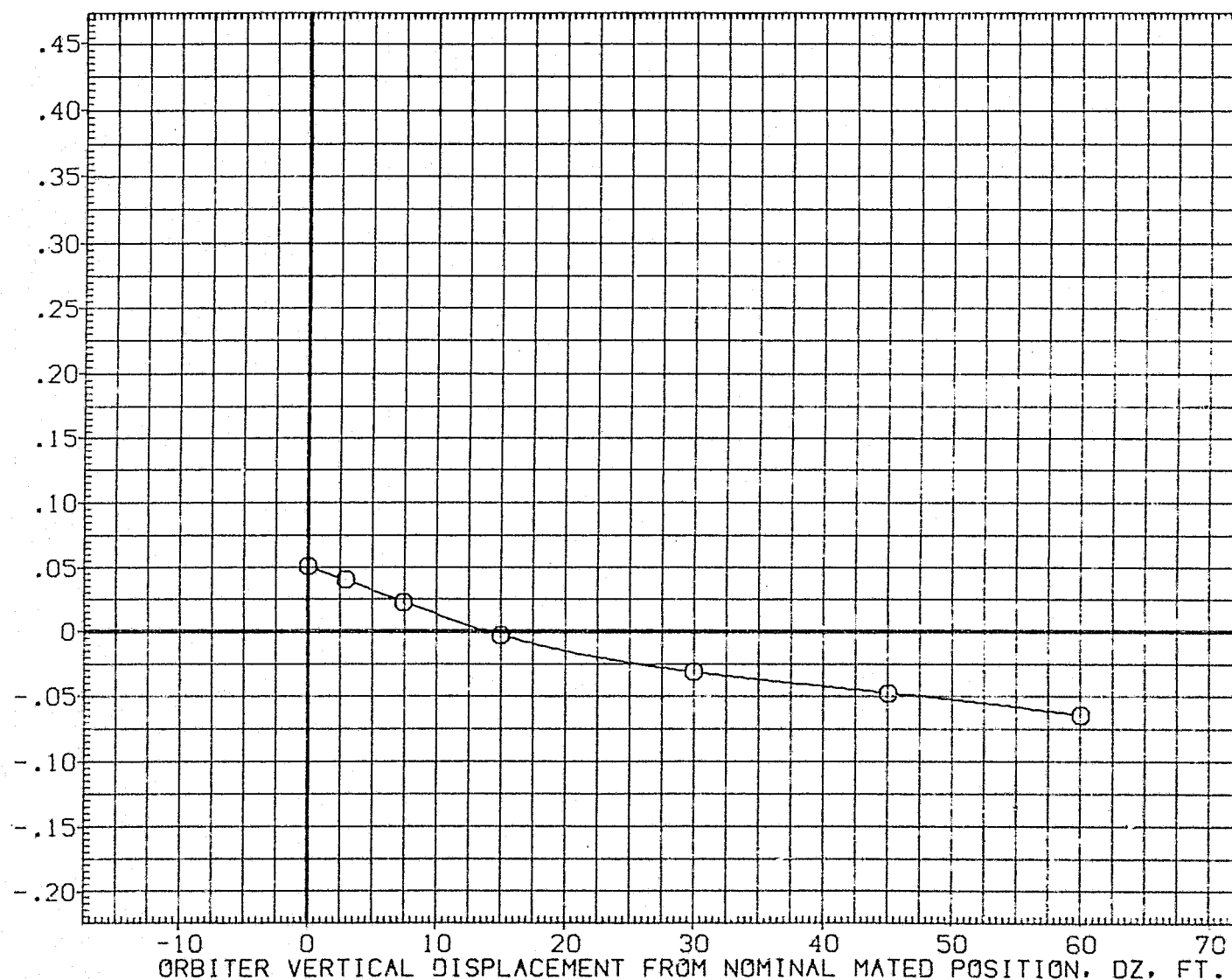


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN137)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

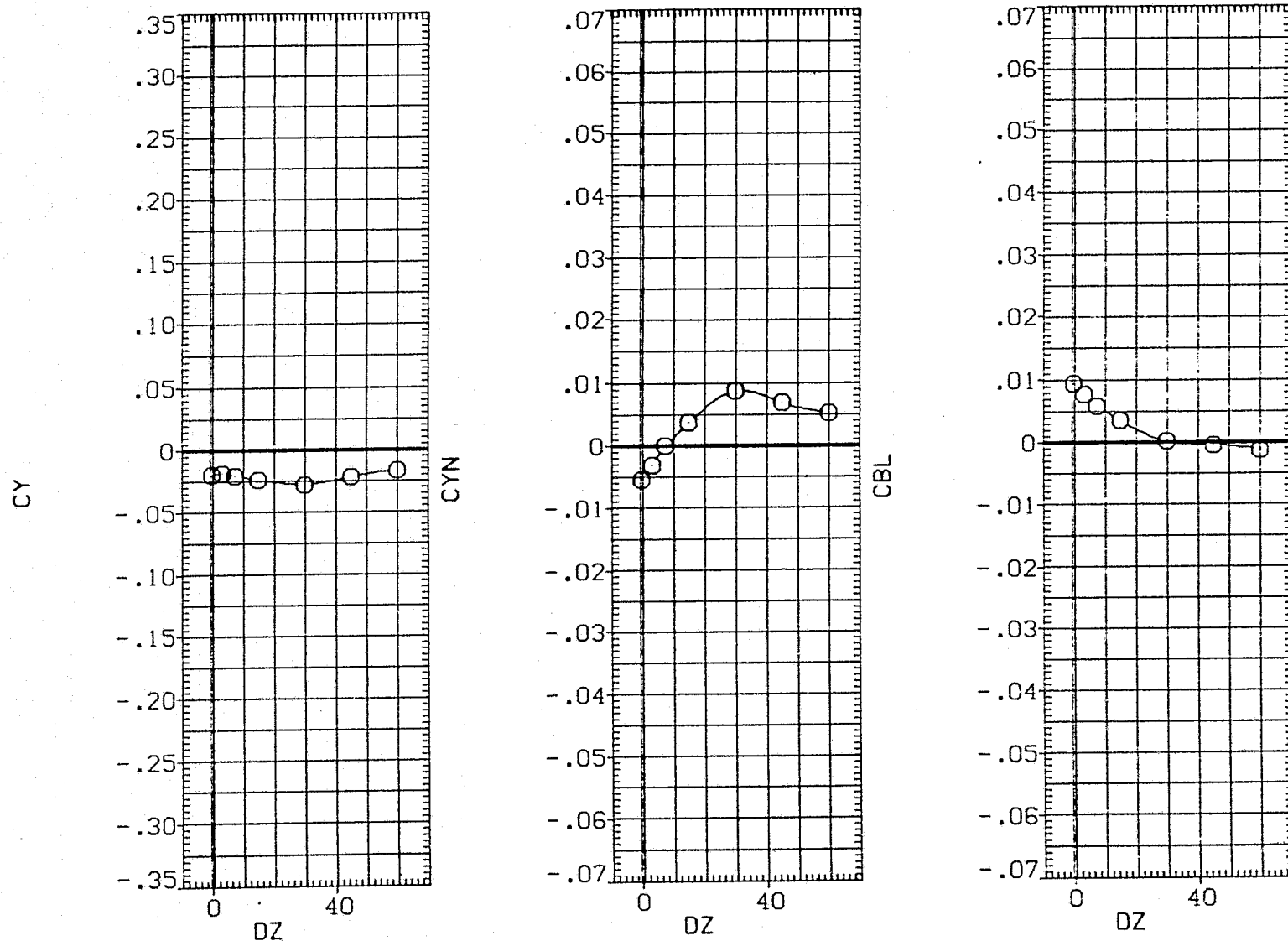


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA(MGN137)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 4.000	BETAC .000
		ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		BETA0 .000	PHI .000
		DY 10.000	DX .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

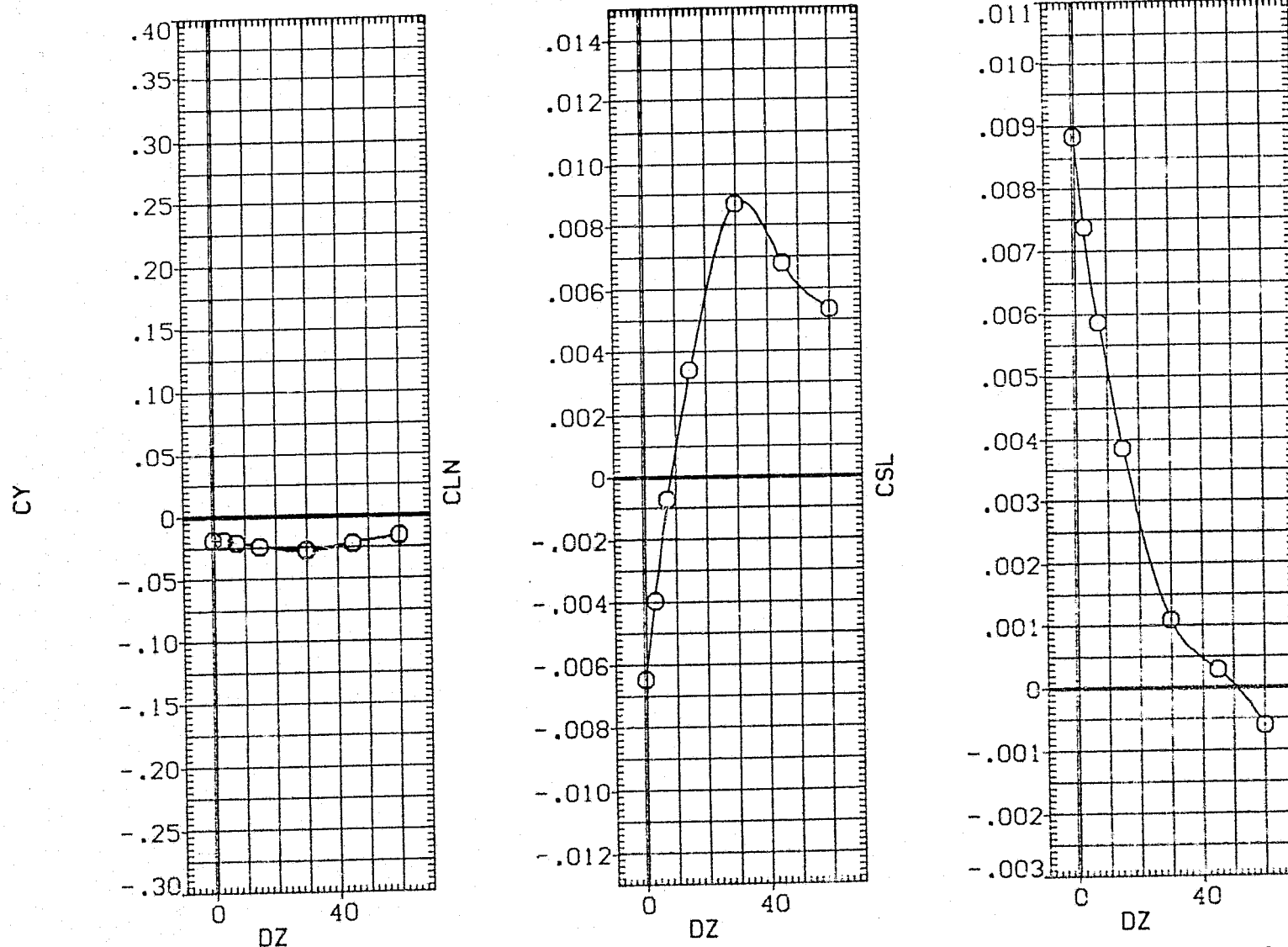


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (137 - 035) (UGN137)

SYMBOL
○ALPHA0
10.000ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000	BETAC	.000
.000	ELV-0B	3.000
5.000	MACH	.600
.000	DX	.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

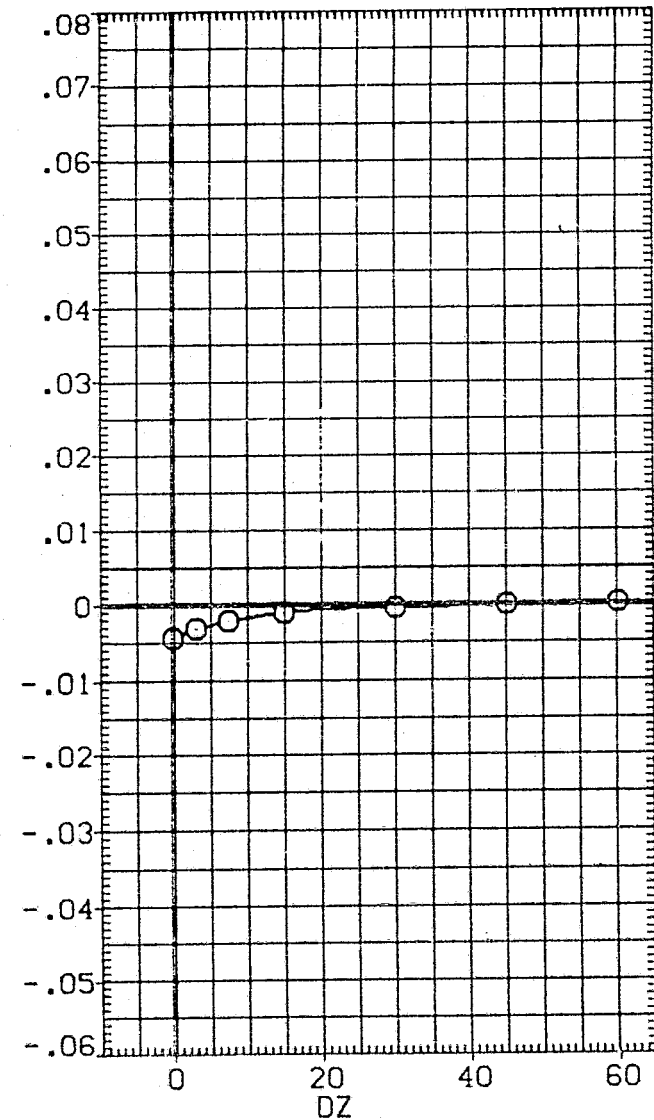
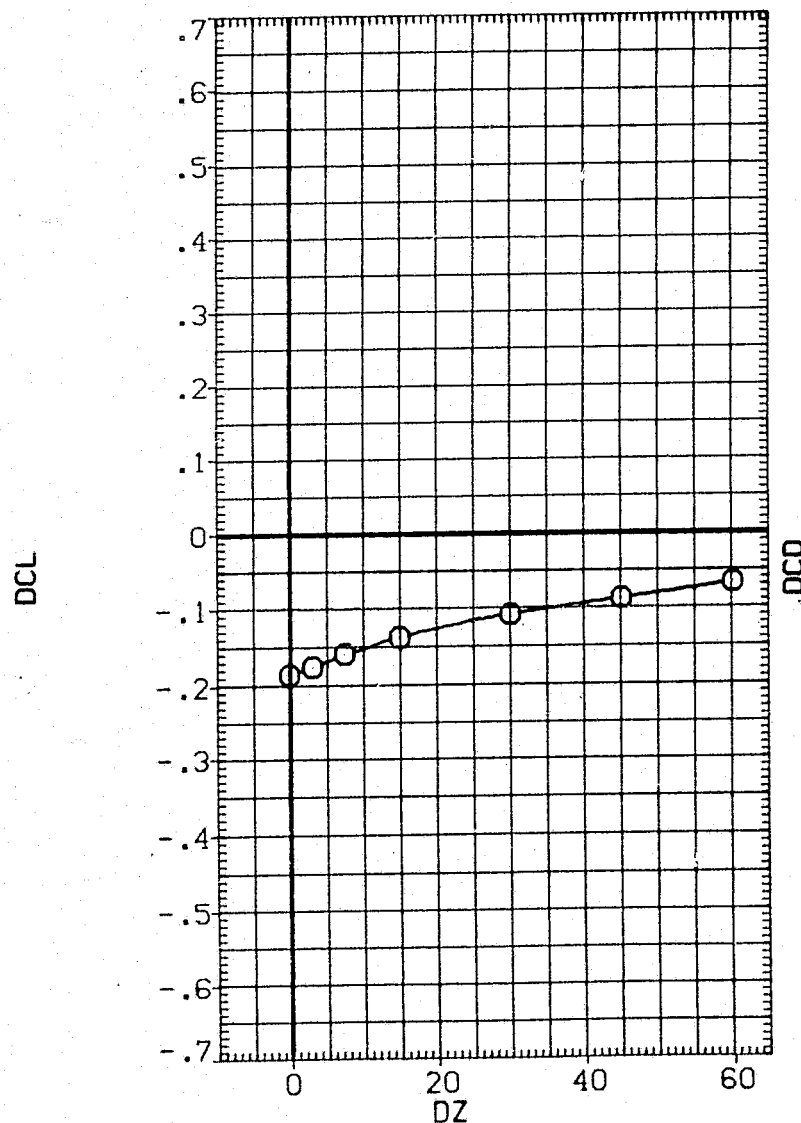


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL

○

ALPHA0

10.000

ALPHAC

PARAMETRIC VALUES

4.000 BETAC .000

ELV-1B

.000 ELV-0B 3.000

ELEVON

5.000 MACH .600

PHI

.000 DX .000

DY

10.000 BETA0 .000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.

LREF 327.7800 IN.

BREF 2348.0400 IN.

XMRP 1339.9000 IN.XC

YMRP .0000 IN.YC

ZMRP 190.8000 IN.ZC

SCALE .0300

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

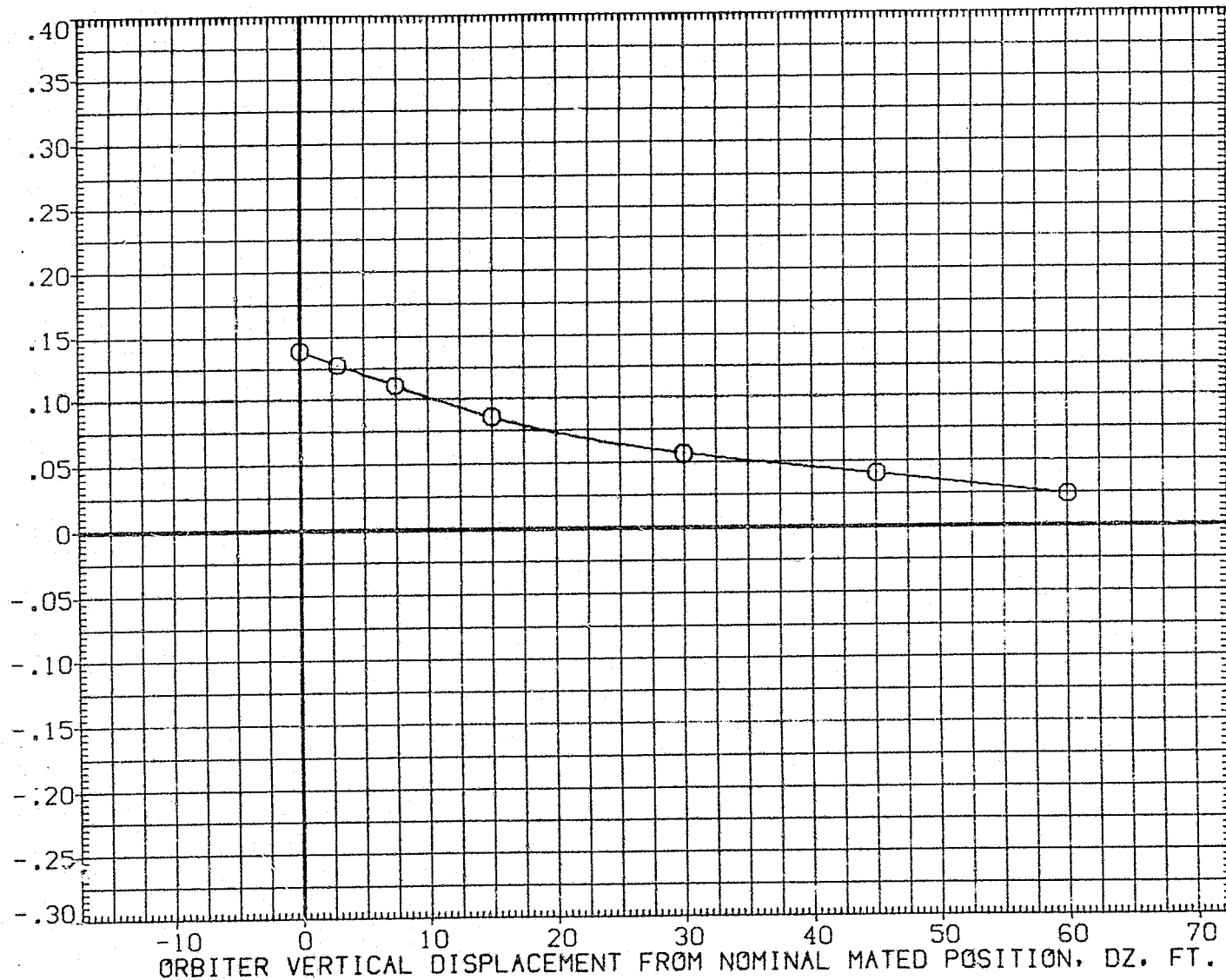


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (137 - 035) (UGN137)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

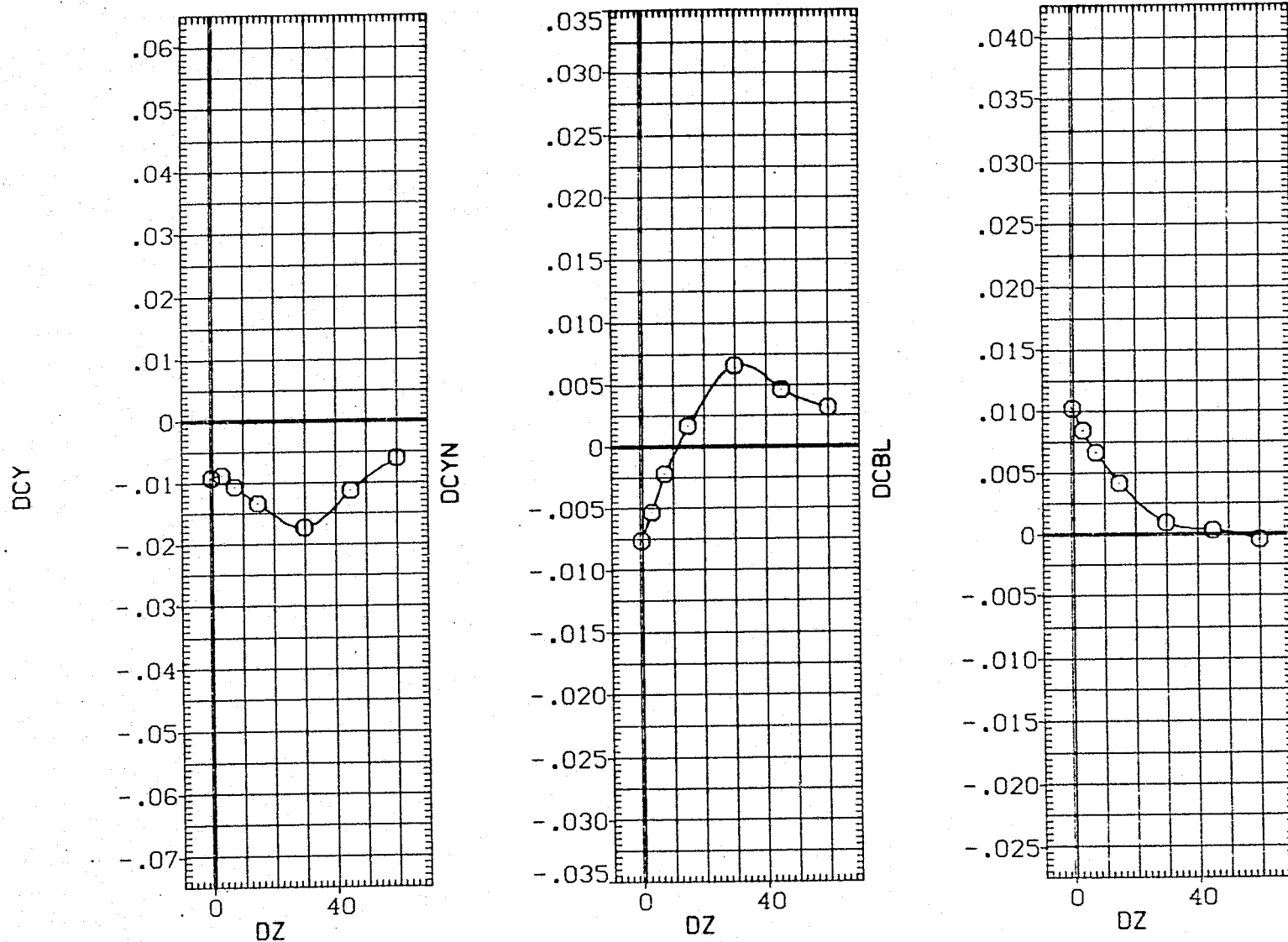


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	-10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

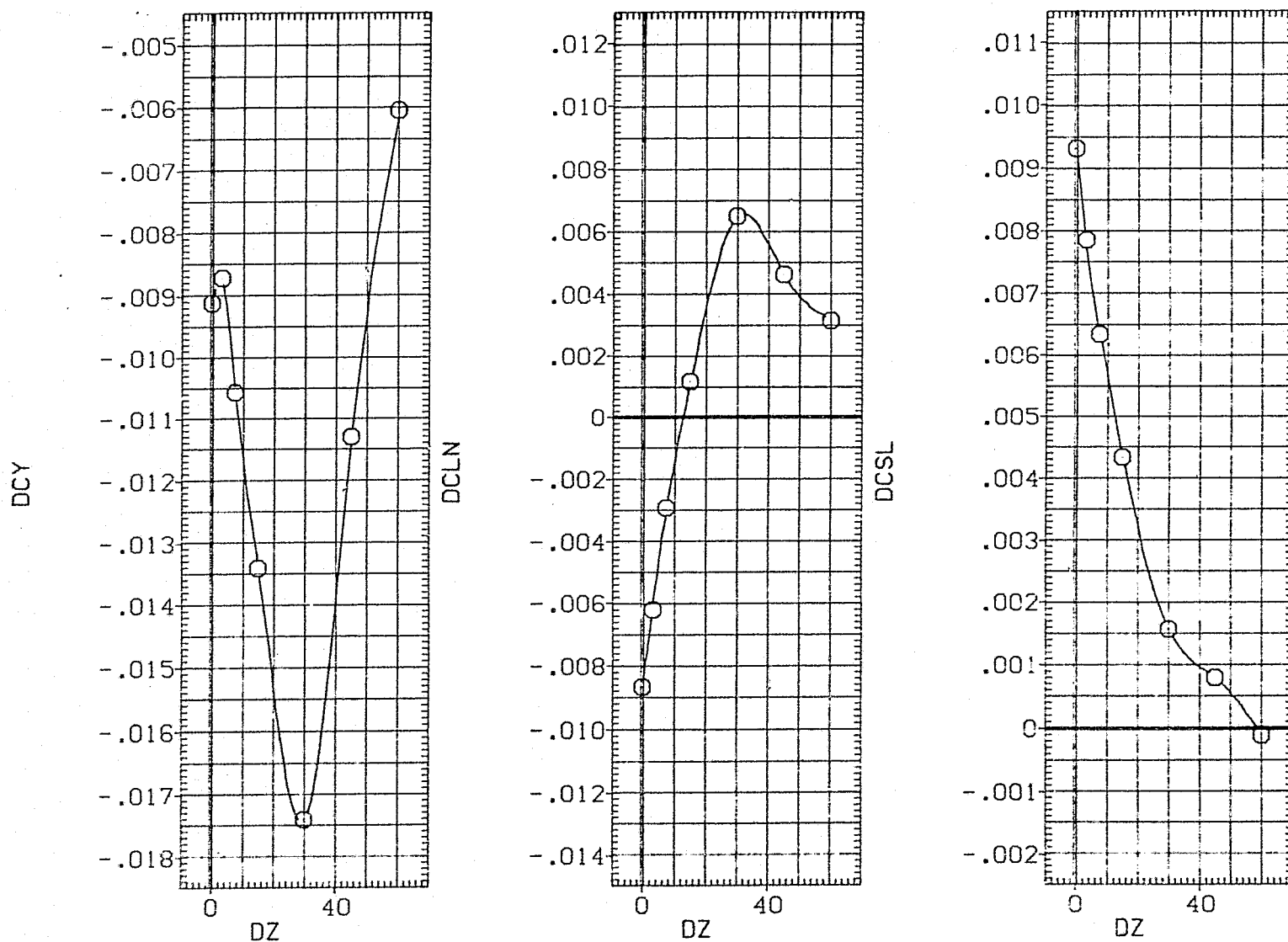


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN138)

SYMBOL ○	ALPHA0	PARAMETRIC VALUES			
	10.000	ALPHAC	4.000	BETAC	.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETAO	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

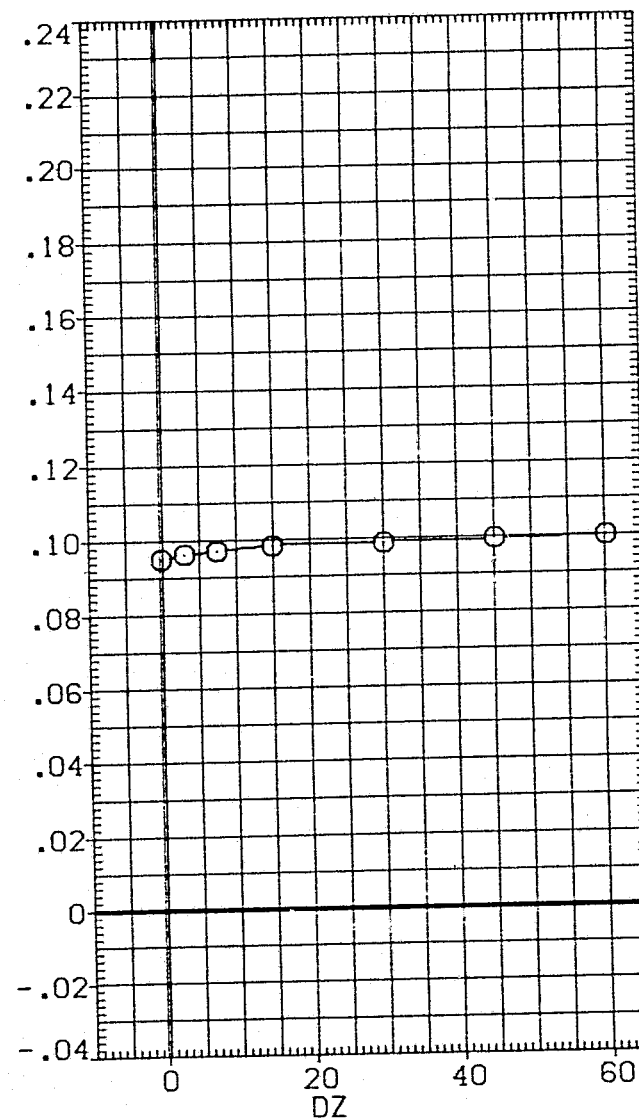
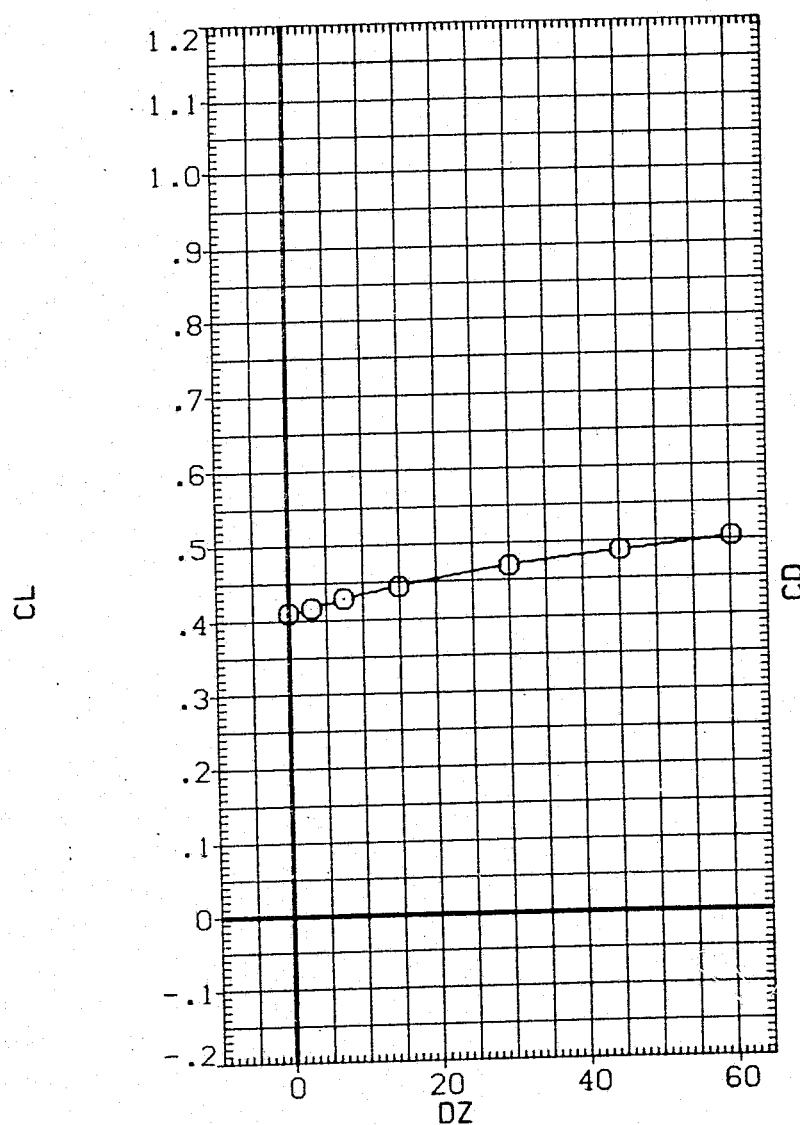


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN138)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

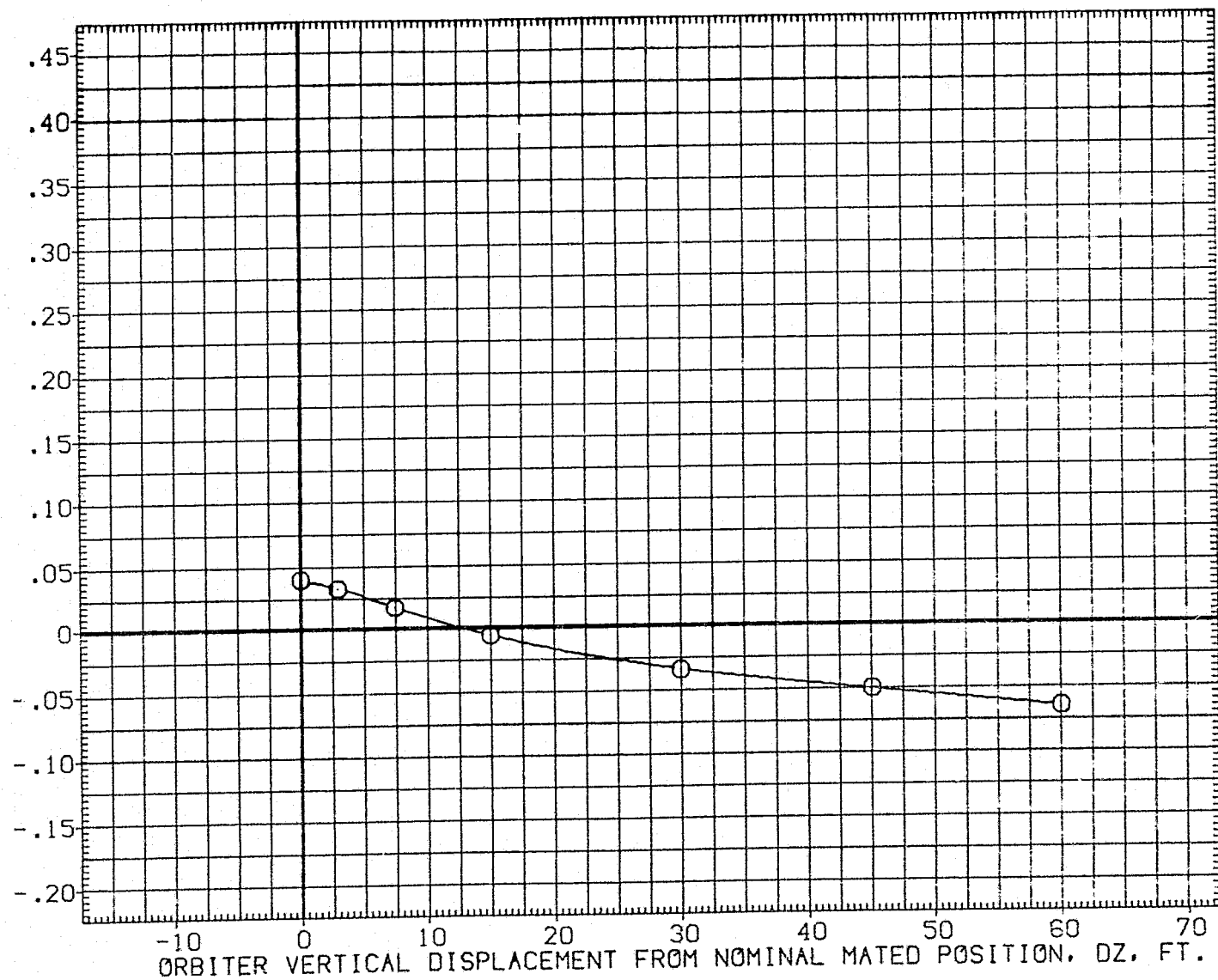


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN138)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 4.000	BETAC .000
		ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		BETA0 .000	PHI .000
		DY 10.000	DX 10.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

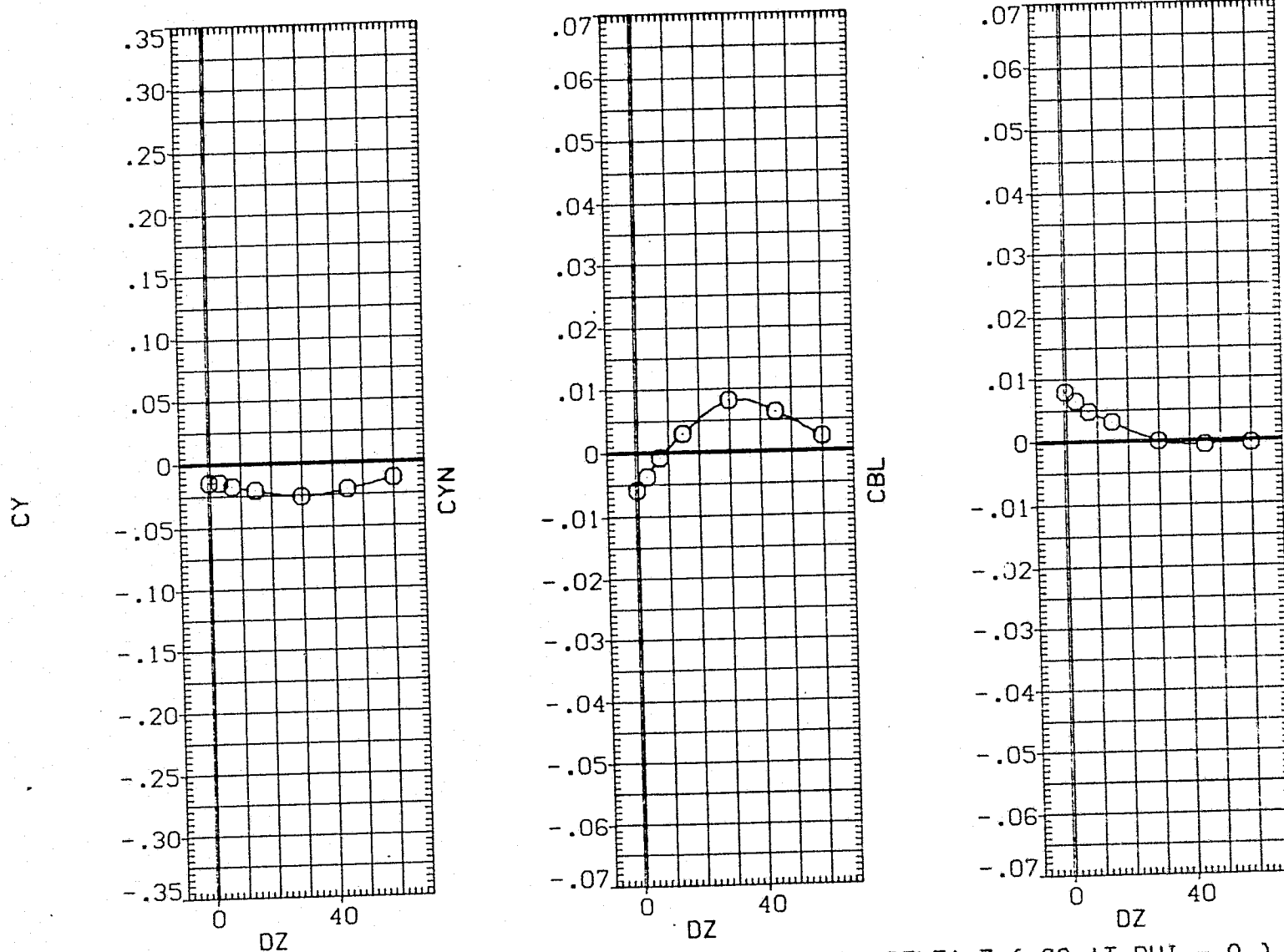


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL		ALPHAD		PARAMETRIC VALUES			
O		10.000		ALPHAC	4.000	BETAC	.000
				ELV-10	.000	ELV-08	3.000
				ELEVON	5.000	MACH	.600
				BETA0	.000	PHI	.000
				DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

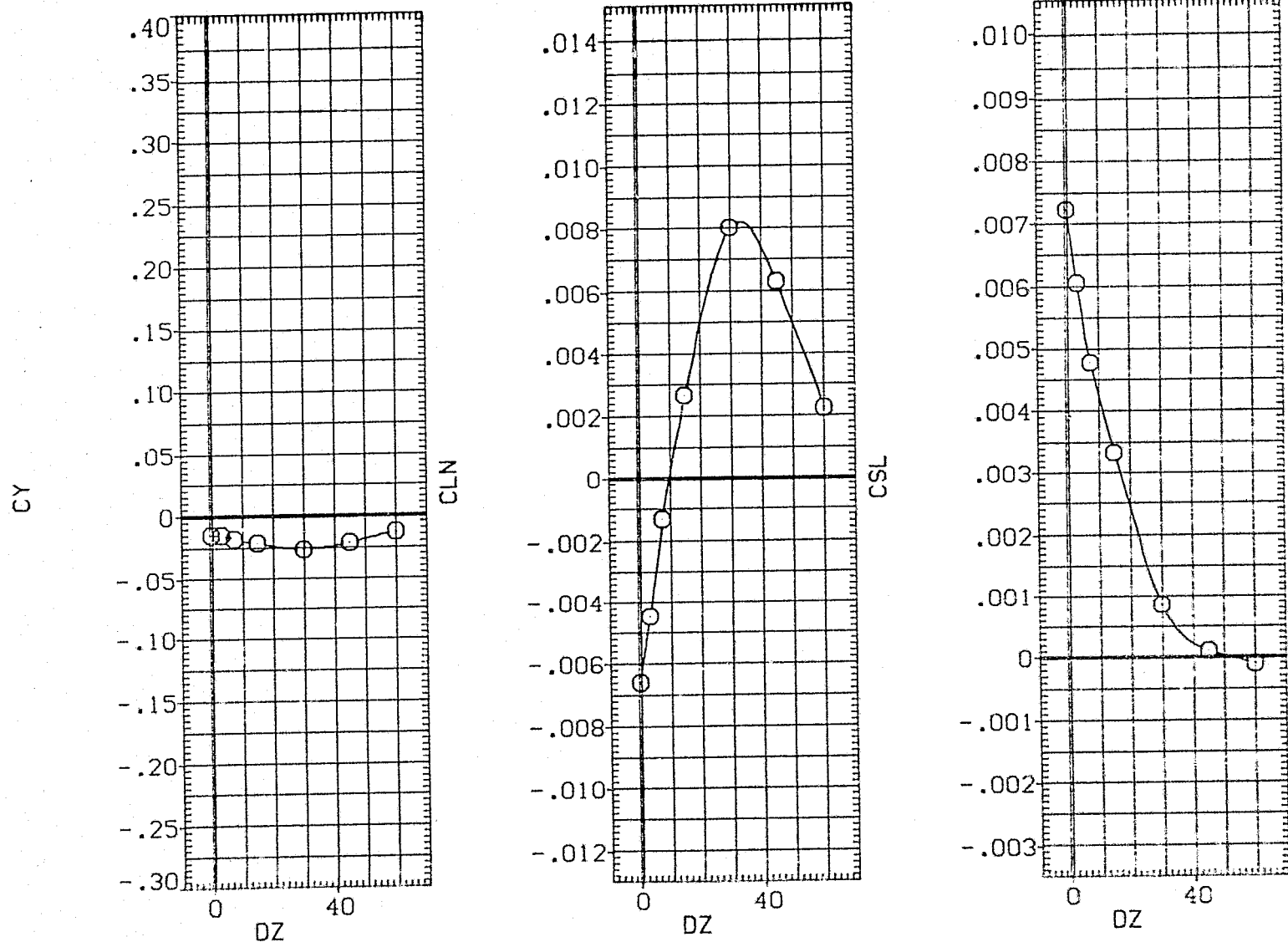


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (138 - 035)(UGN138)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

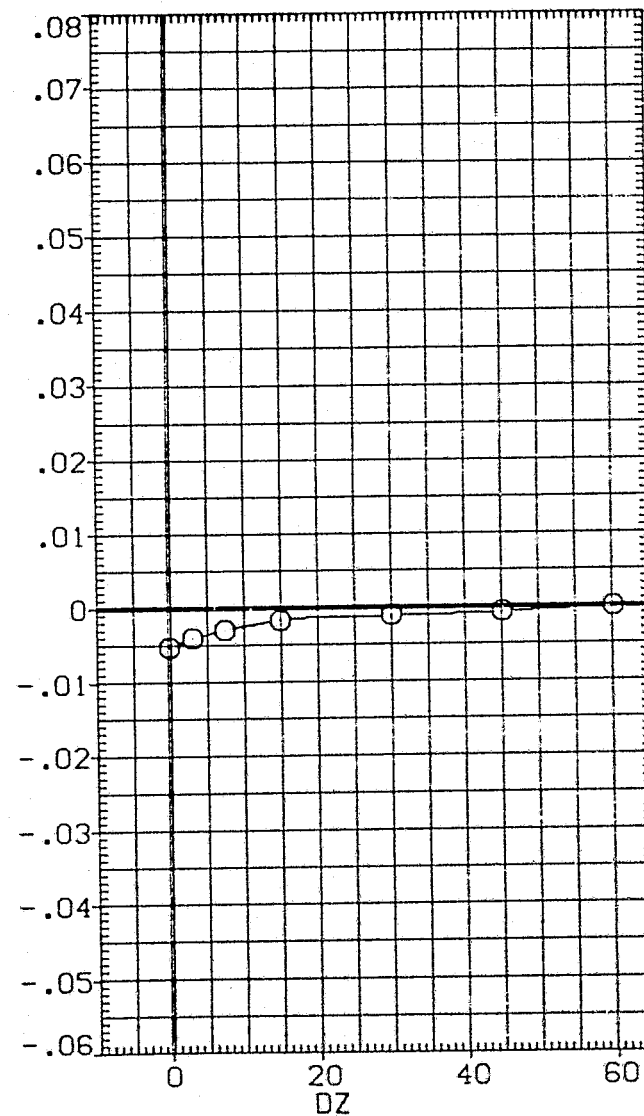
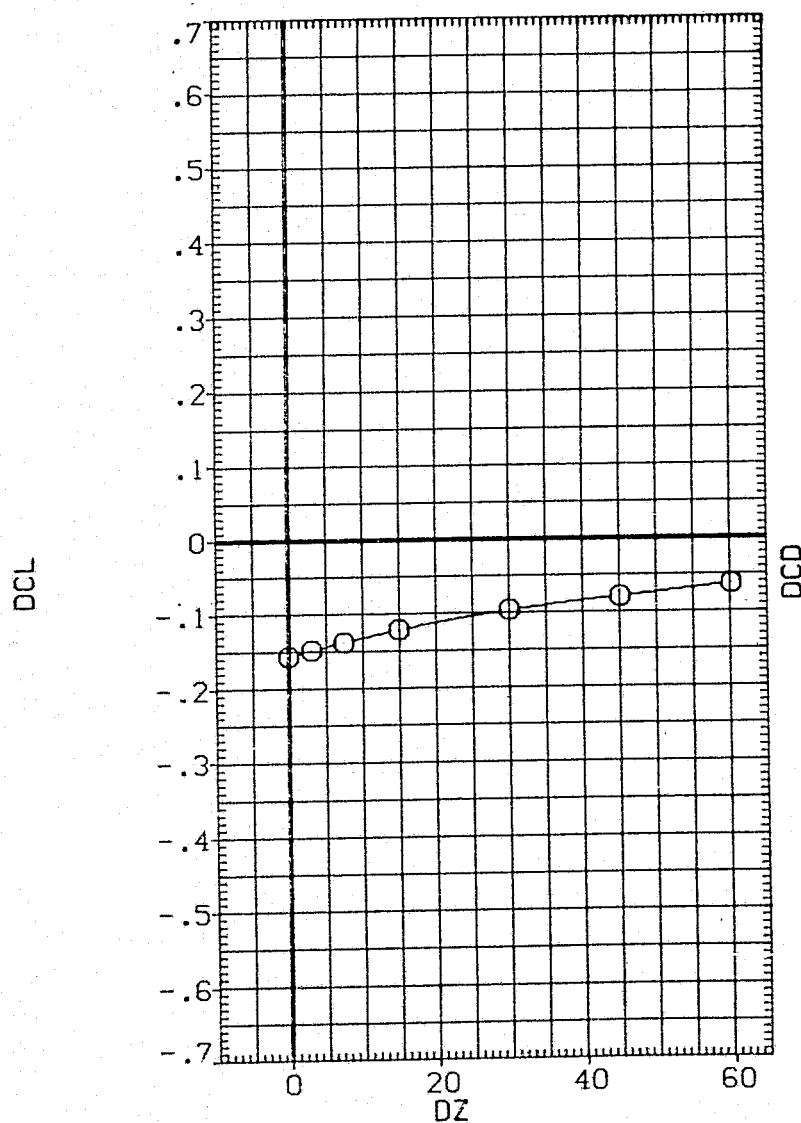


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL		PARAMETRIC VALUES				
O	ALPHA0	10.000	ALPHAC	4.000	BETAC	.000
			ELV-1B	.000	ELV-0B	3.000
			ELEVON	5.000	MACH	.600
			PHI	.000	DX	10.000
			DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.8000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

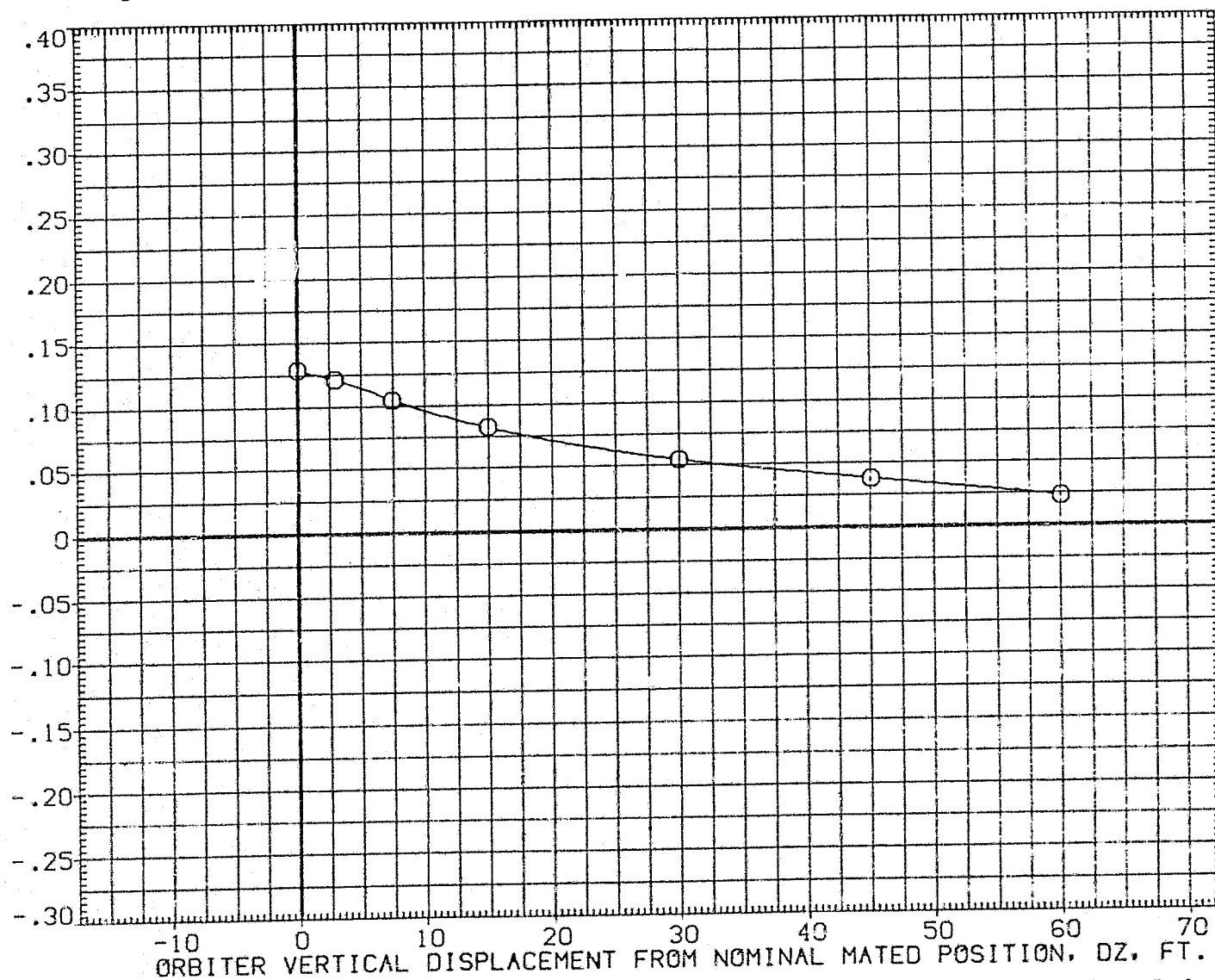


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (138 - 035) (UGN138)

SYMBOL
○

ALPHA0
10.000

ALPHAC
ELV-IB
ELEVON
PHI
DY

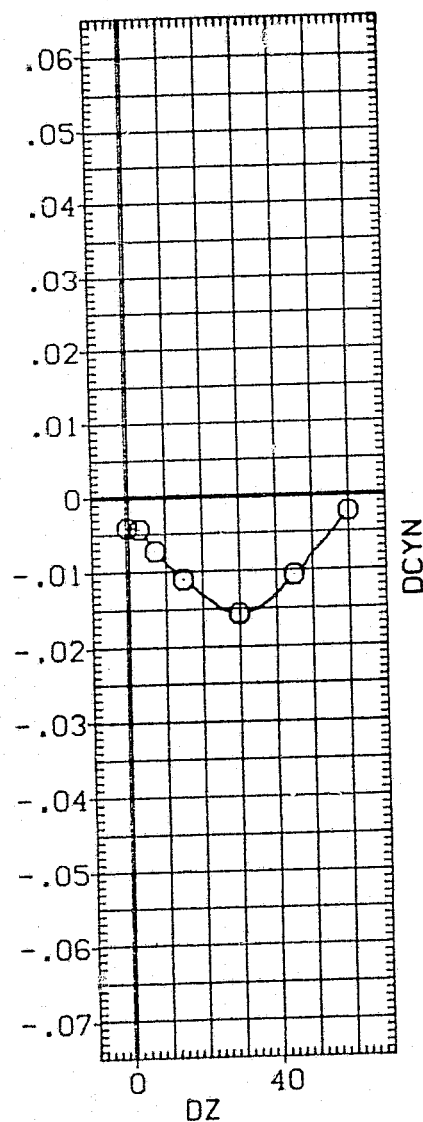
PARAMETRIC VALUES

4.000 BETAC .000
.000 ELV-OB 3.000
5.000 MACH .600
.000 DX 10.000
10.000 BETAC .000

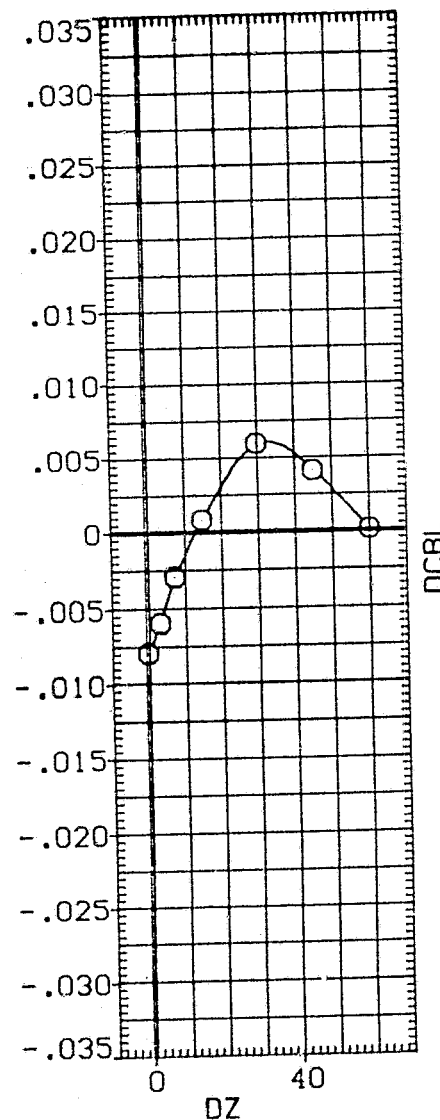
REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.7800 IN.
BREF 2348.0400 IN.
XMRP 1339.9000 IN.XC
YMRP .0000 IN.YC
ZMRP 190.8000 IN.ZC
SCALE .0300

DCY



DCYN



DCBL

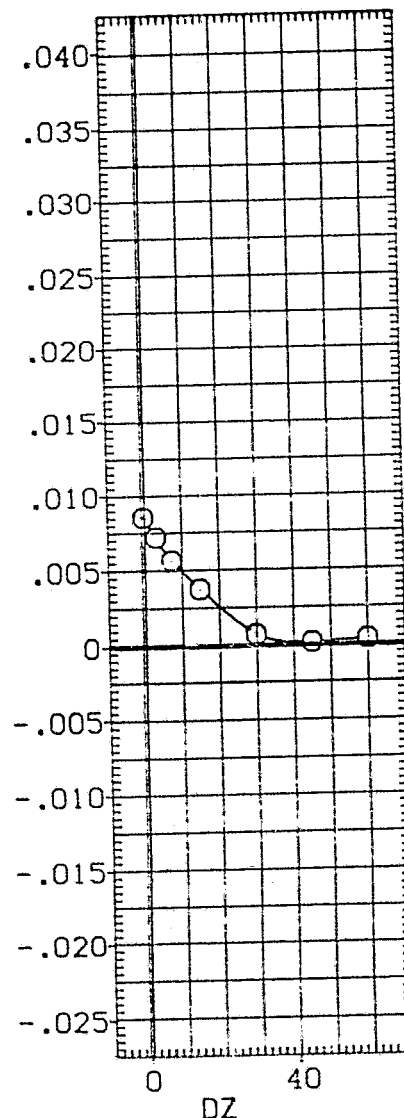


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

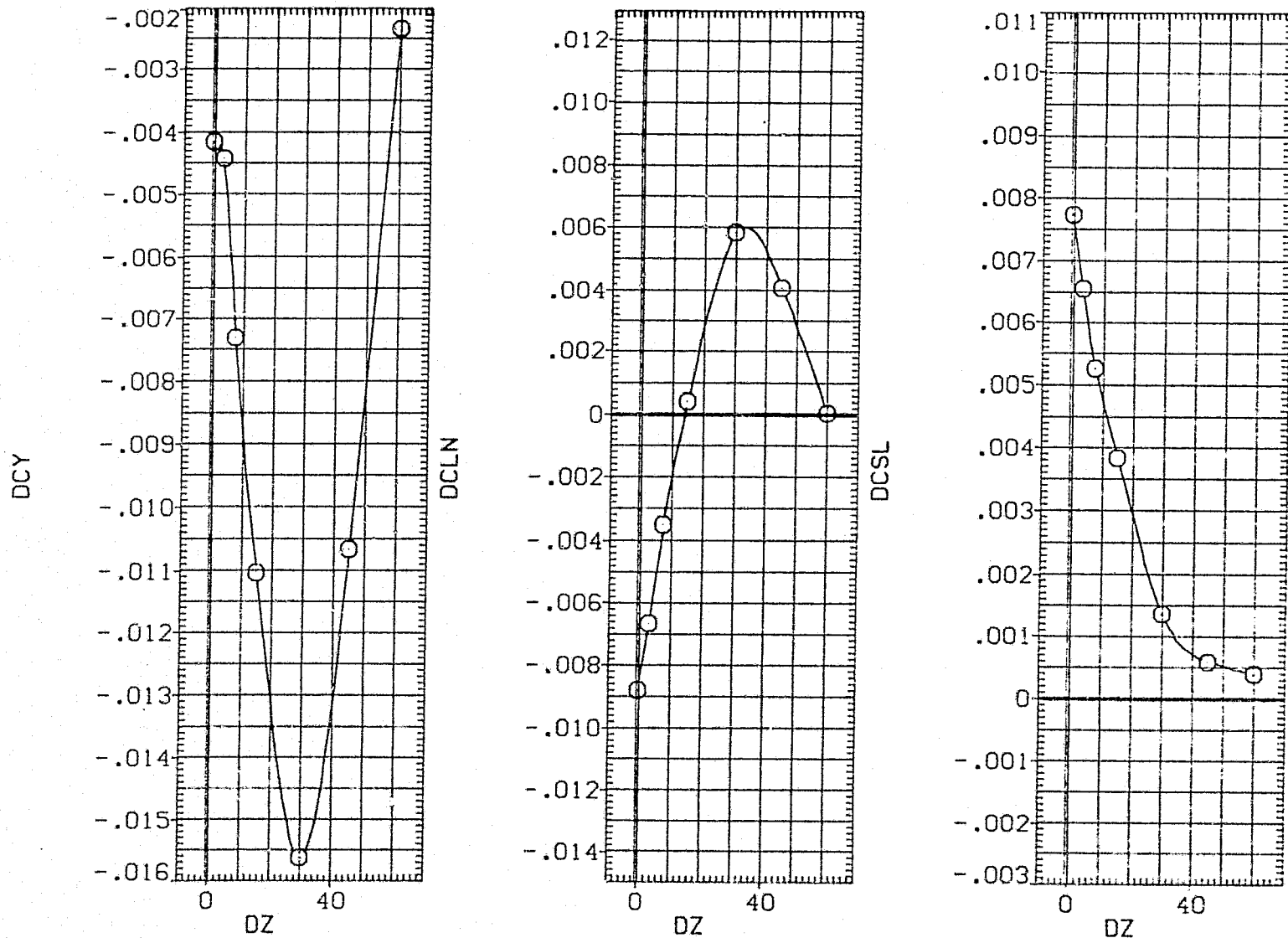


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN139)

SYMBOL		PARAMETRIC VALUES			
○	ALPHA0	ALPHAC	4.000	BETAC	5.000
	10.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

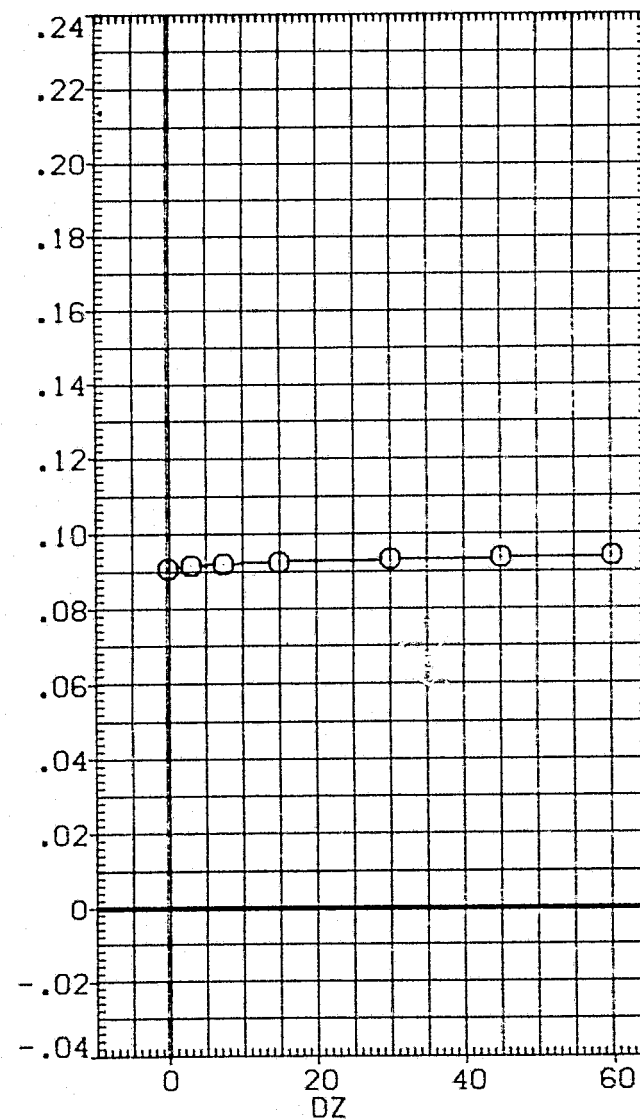
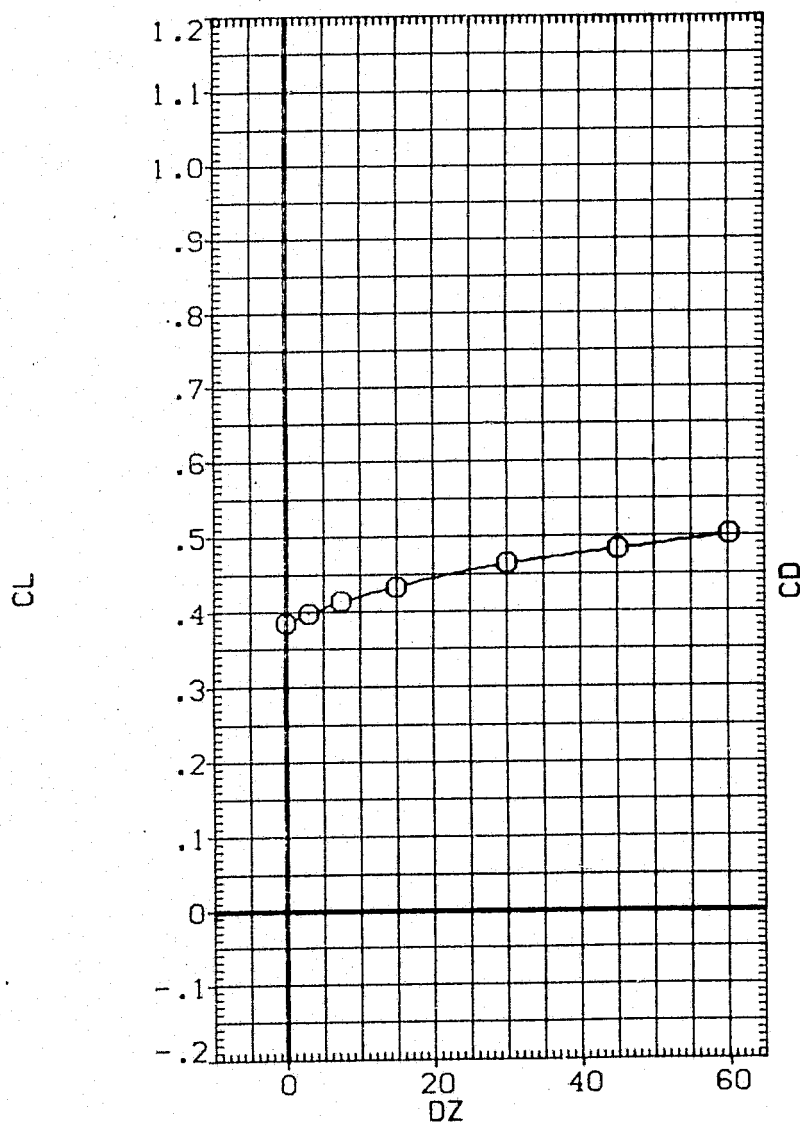


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN139)

SYMBOL	ALPHAD	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

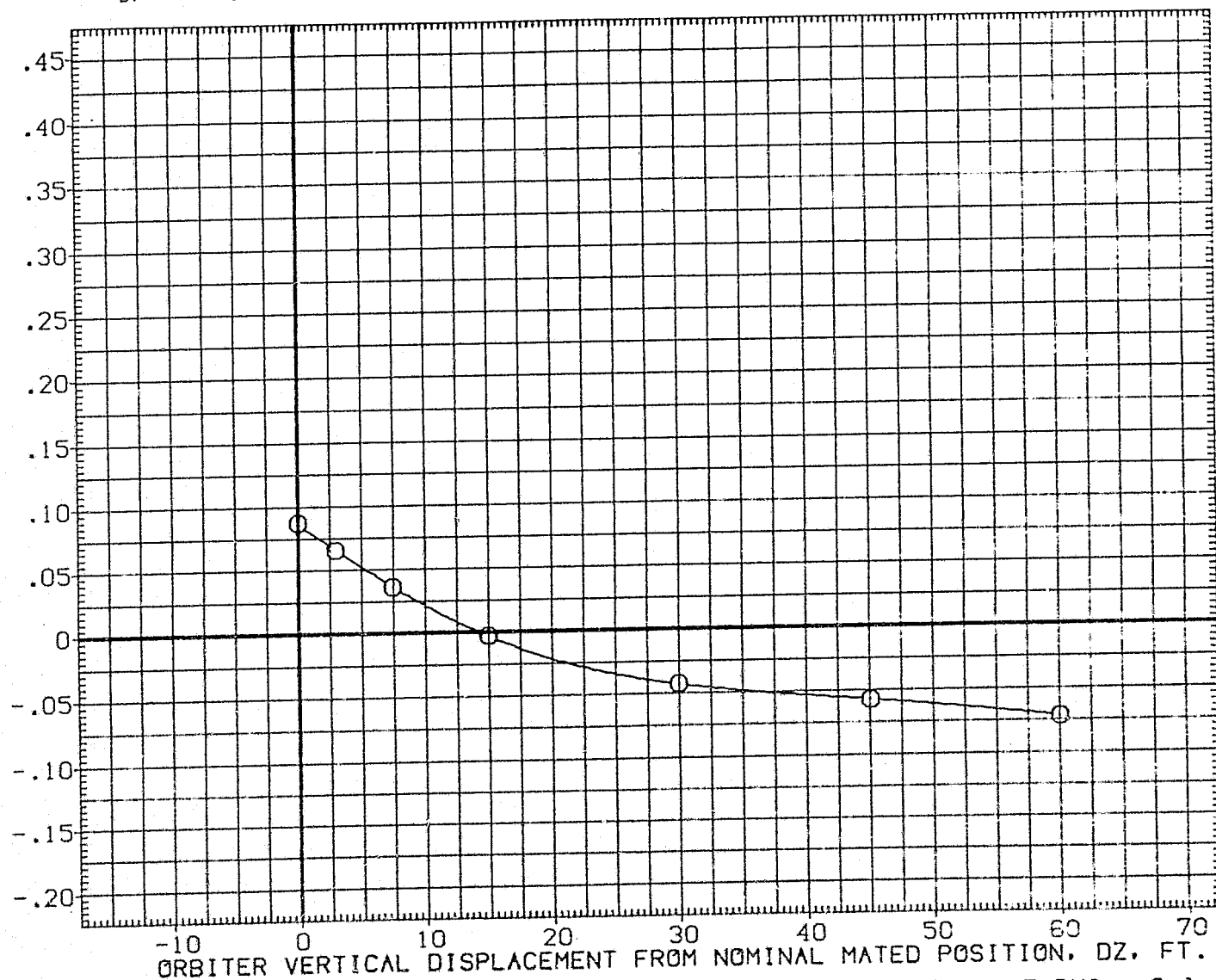


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN139)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

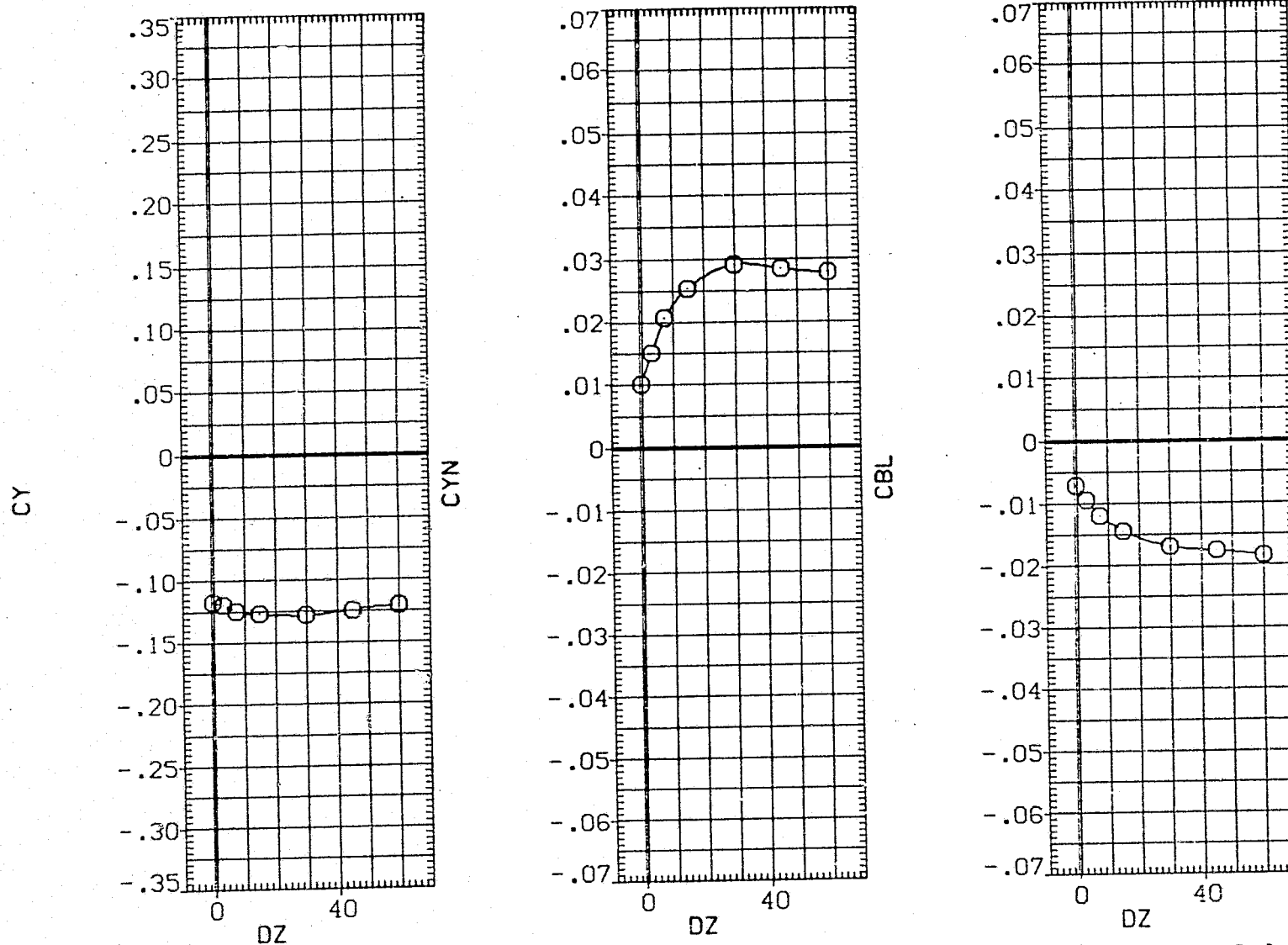


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

C.8

CA20 747/1 02 S1

CARRIER DATA (MGN139)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 4.000	BETAC 5.000
		ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		BETA0 .000	PHI .000
		DY 10.000	DX .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

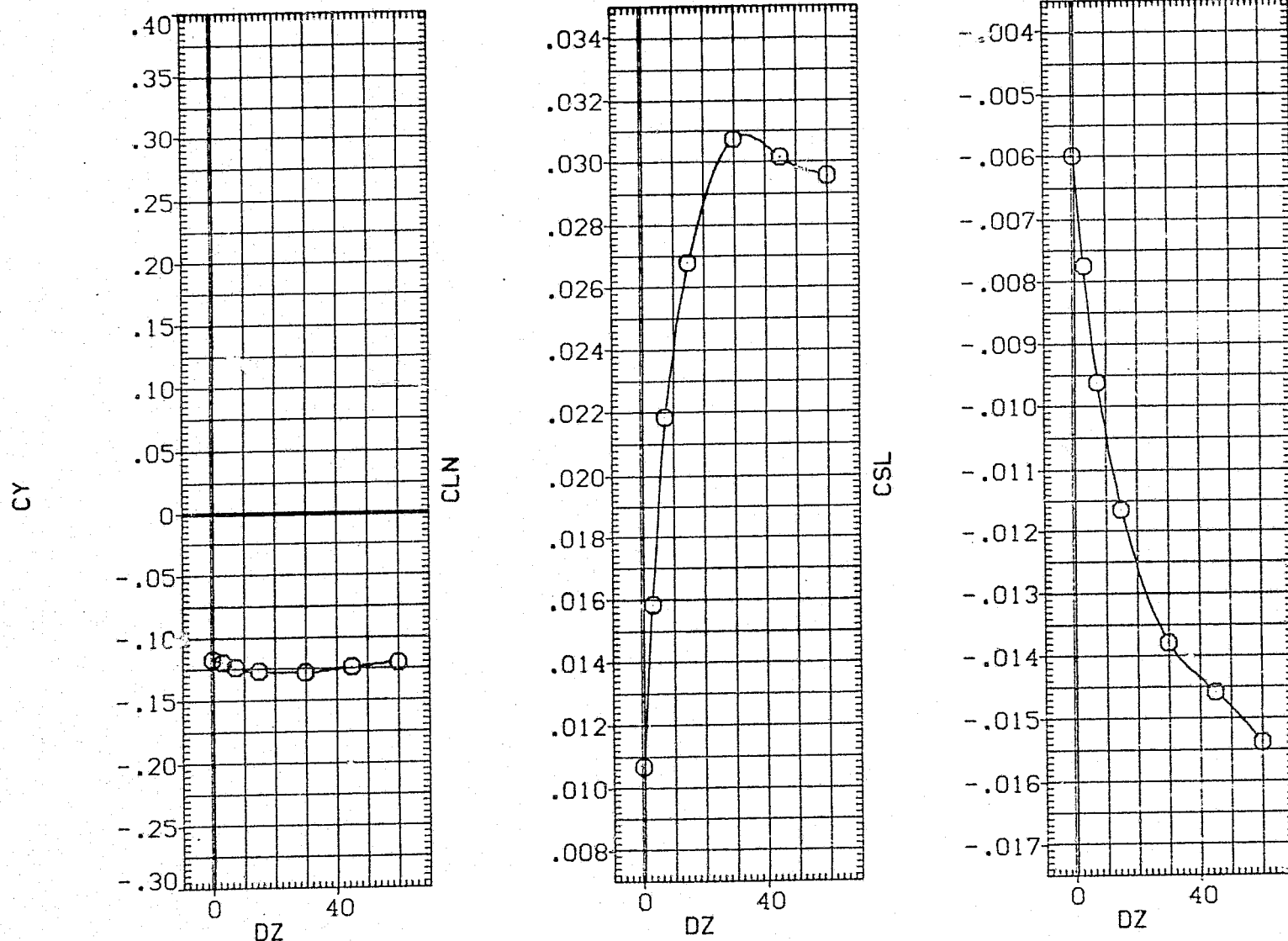


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (139 - 036) (UGN139)

SYMBOL
OALPHA0
10.000

PARAMETRIC VALUES

ALPHA0	4.000	BETA0	5.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	10.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

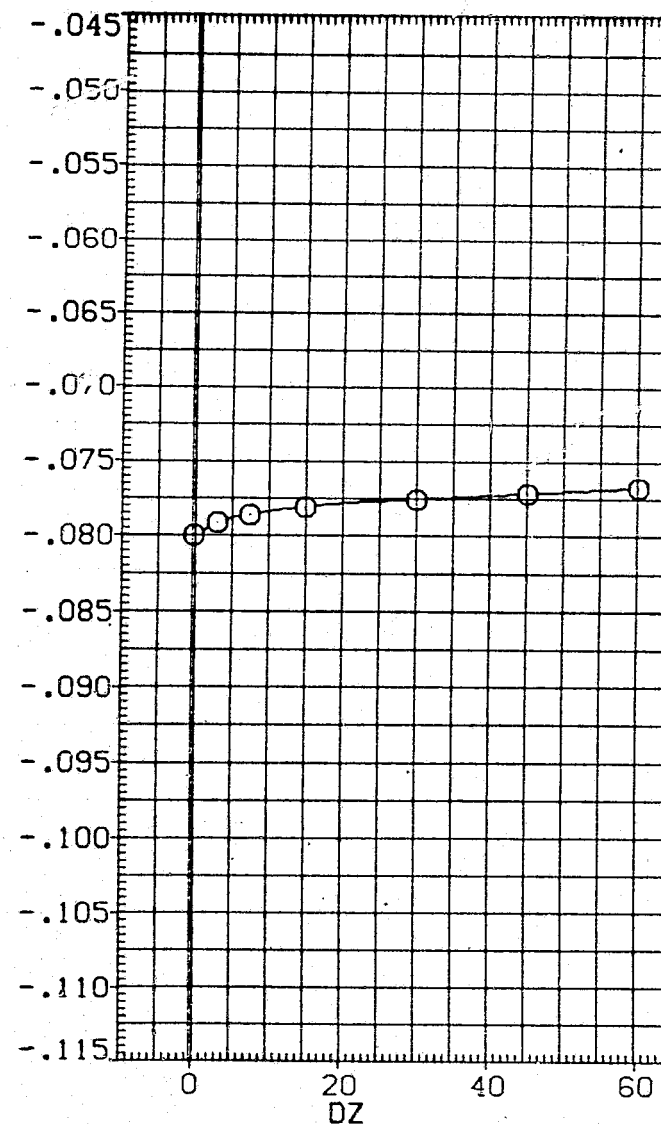
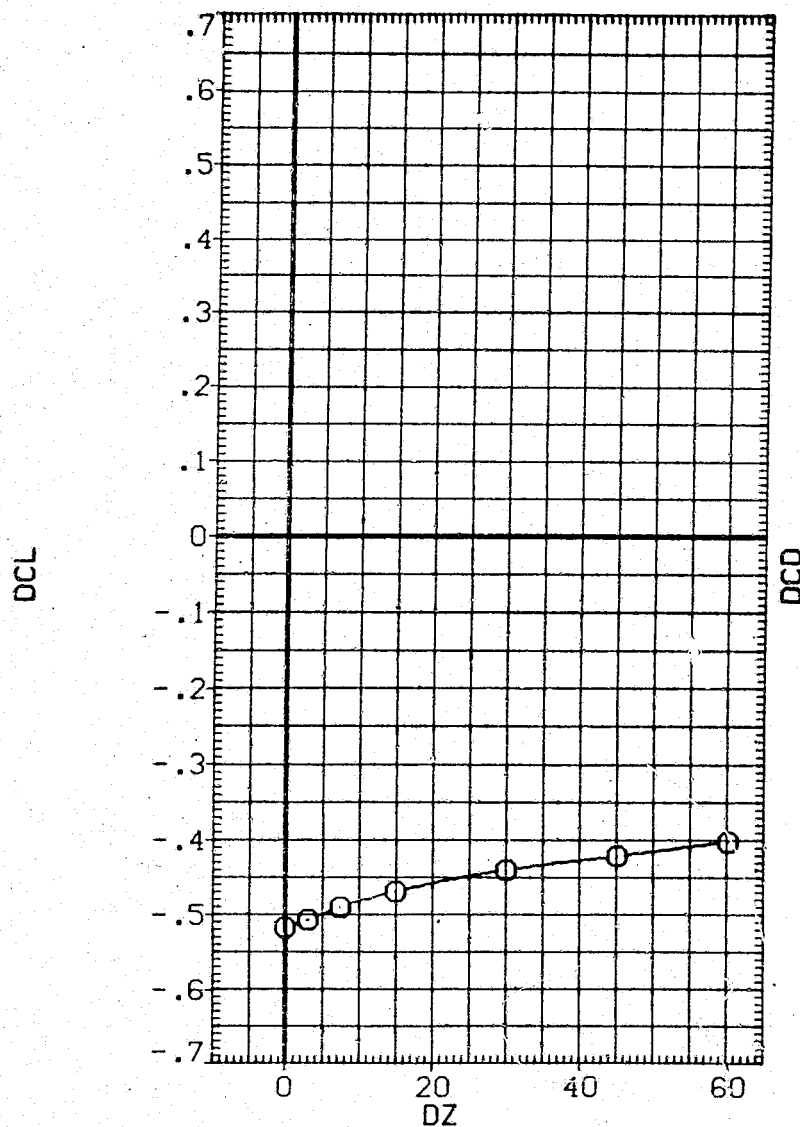


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL
O

ALPHA0
10.000

ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000 BETAC 5.000
.000 ELV-OB 3.000
5.000 MACH .600
.000 DX .000
10.000 BETA0 .000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.7800 IN.
BREF 2348.0400 IN.
XMRP 1339.9000 IN.XC
YMRP .0000 IN.YC
ZMRP 190.8000 IN.ZC
SCALE .0300

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

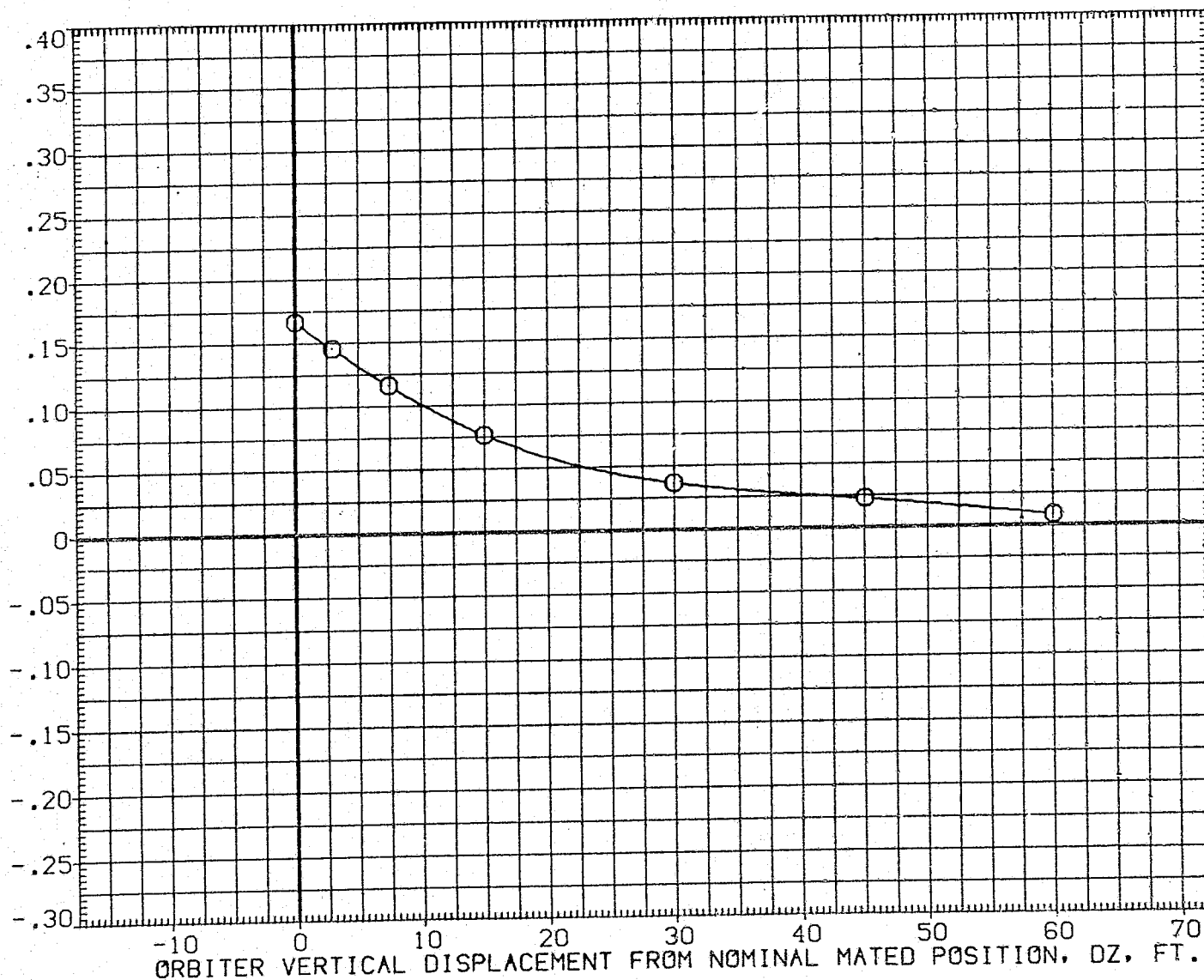


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1) D/S (139 - 036) (UGN139)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7500	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

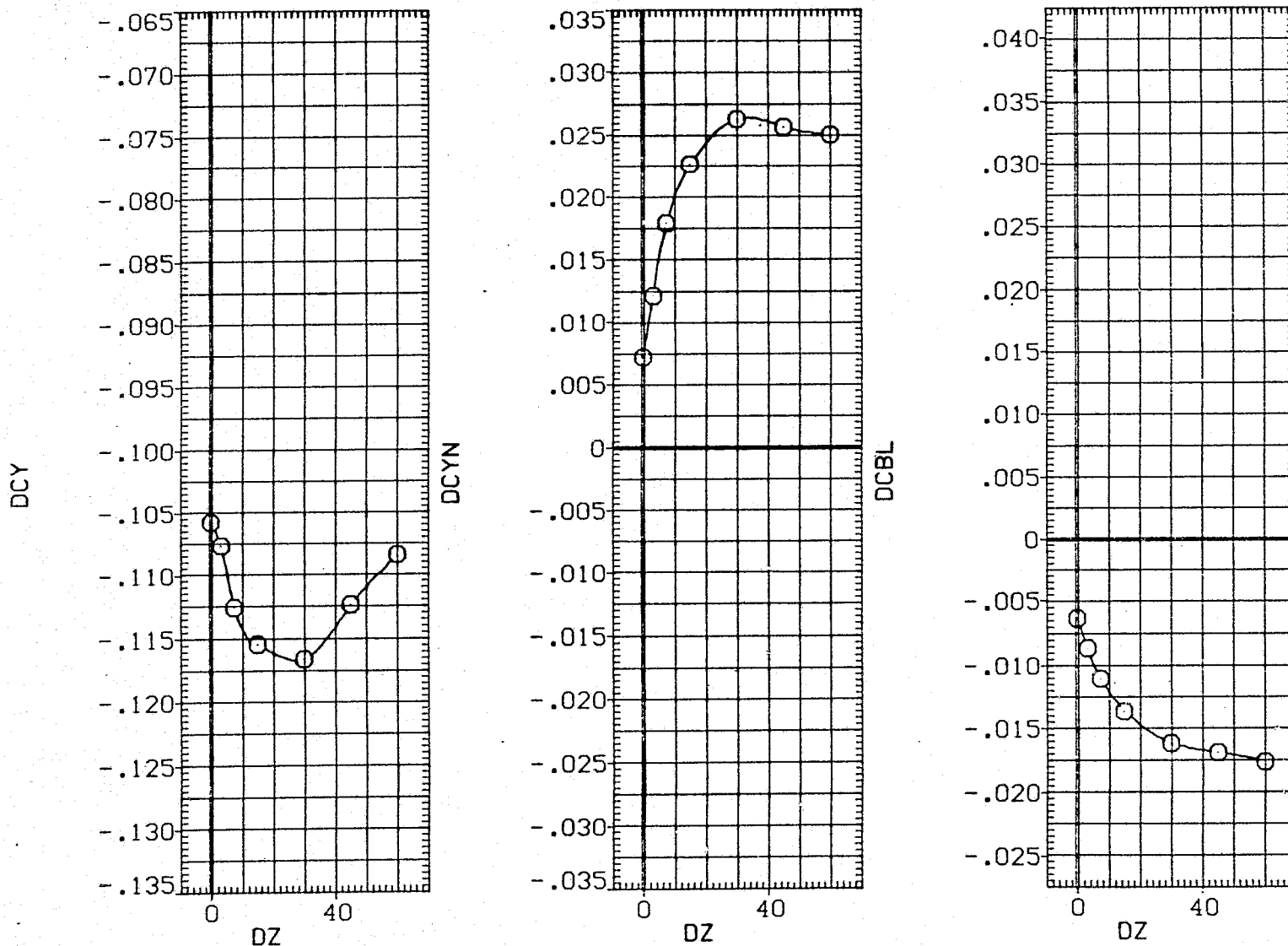


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

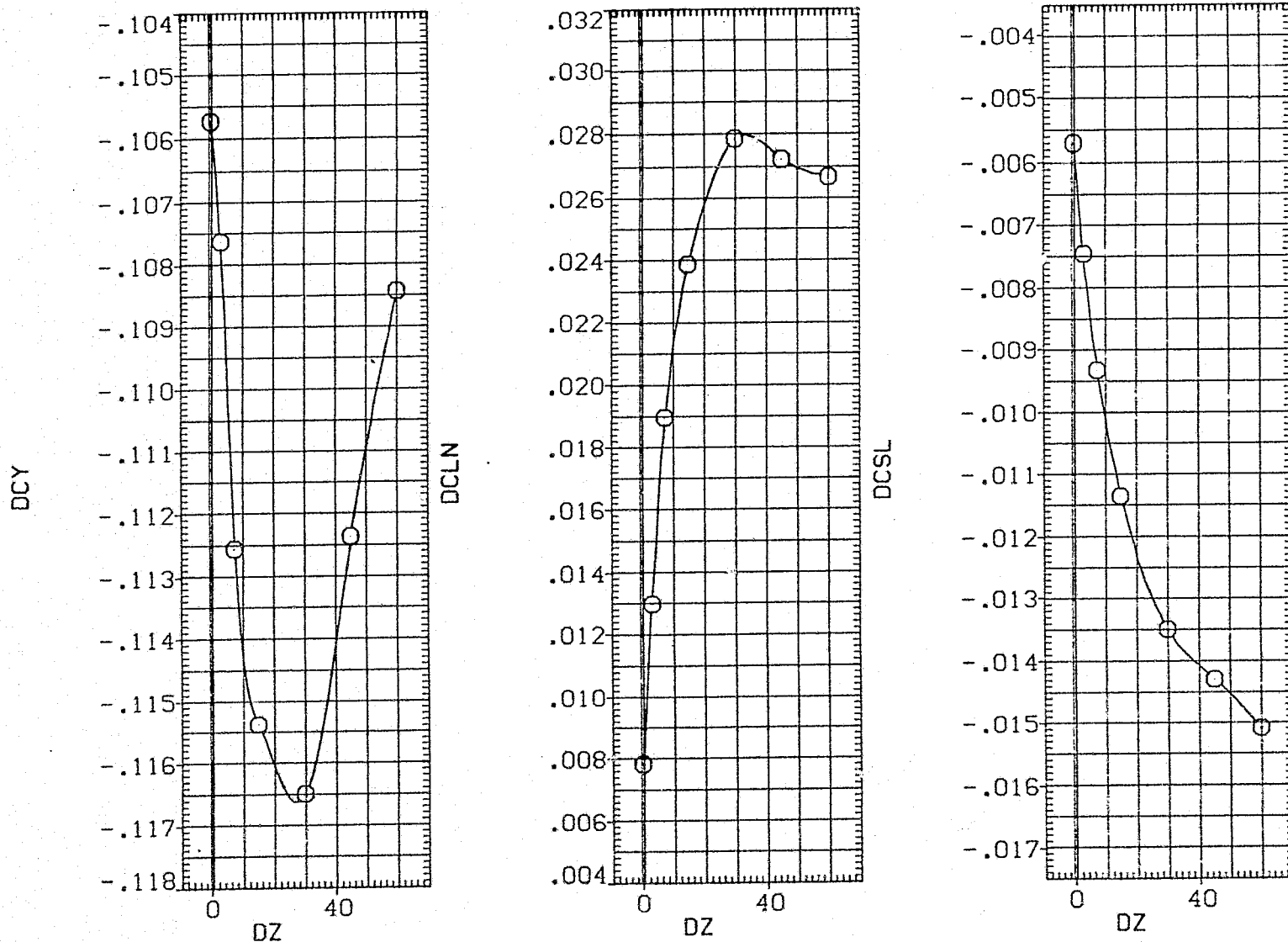


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (32 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN140)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XM RP	1339.9000	IN.XC
YM RP	.0000	IN.YC
ZM RP	190.8000	IN.ZC
SCALE	.0300	

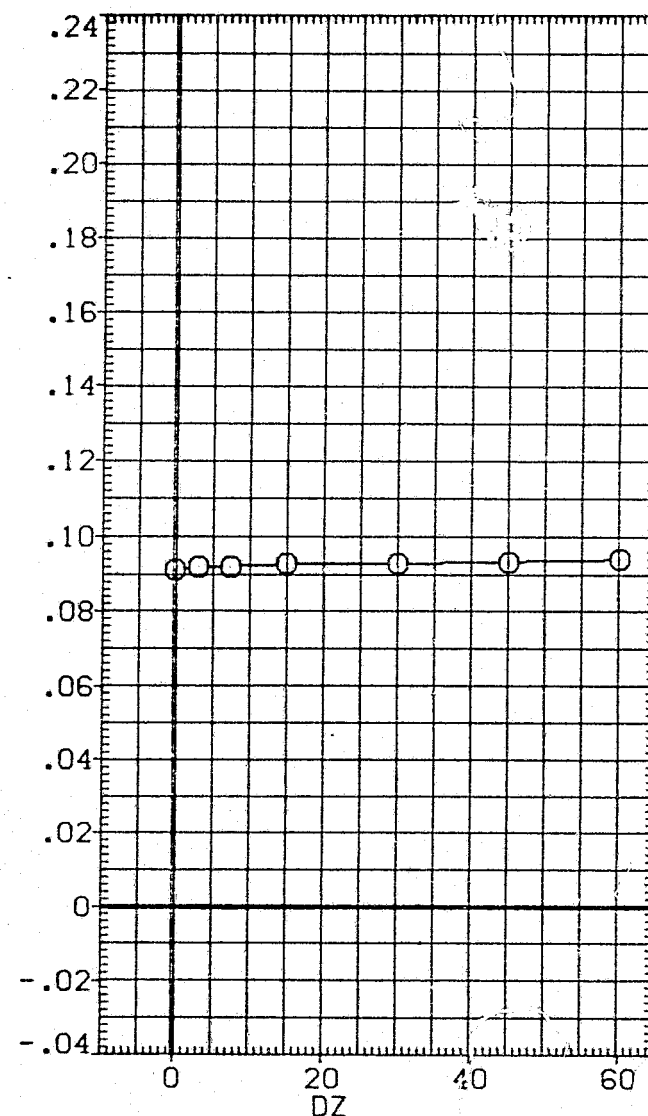
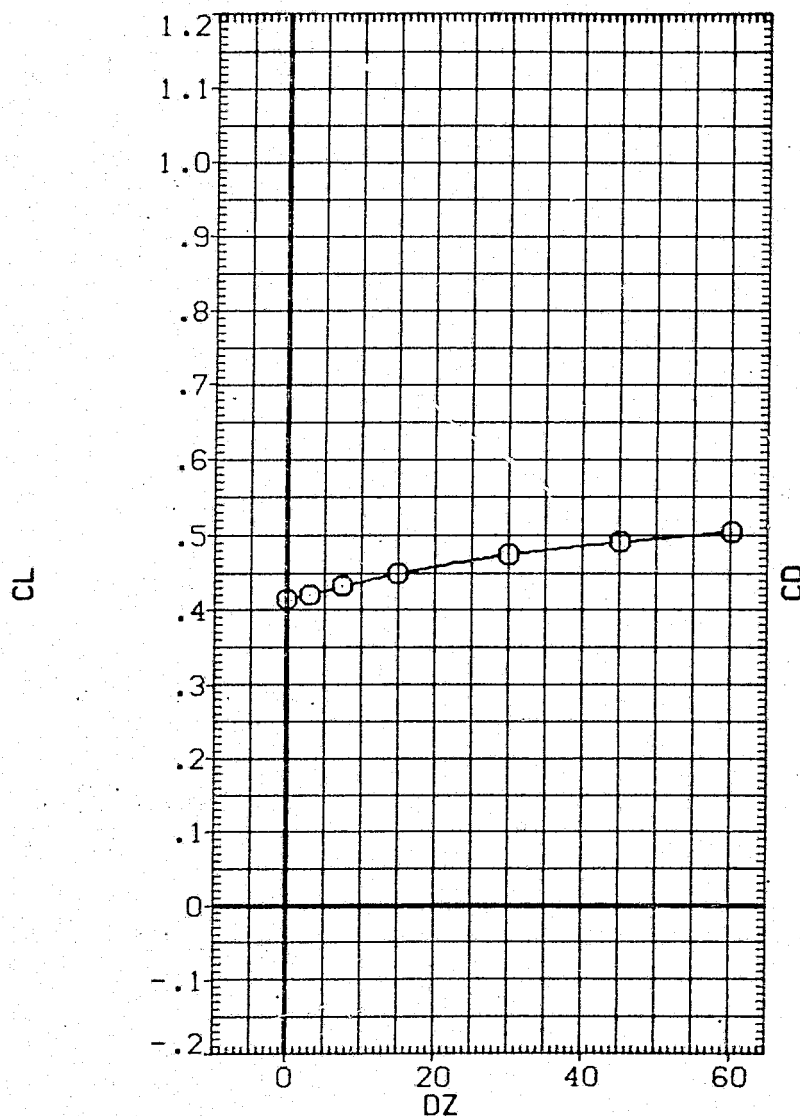


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL		PARAMETRIC VALUES			
○	ALPHA0	ALPHA0	4.000	BETA0	5.000
	10.000	ELV-16	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	133.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

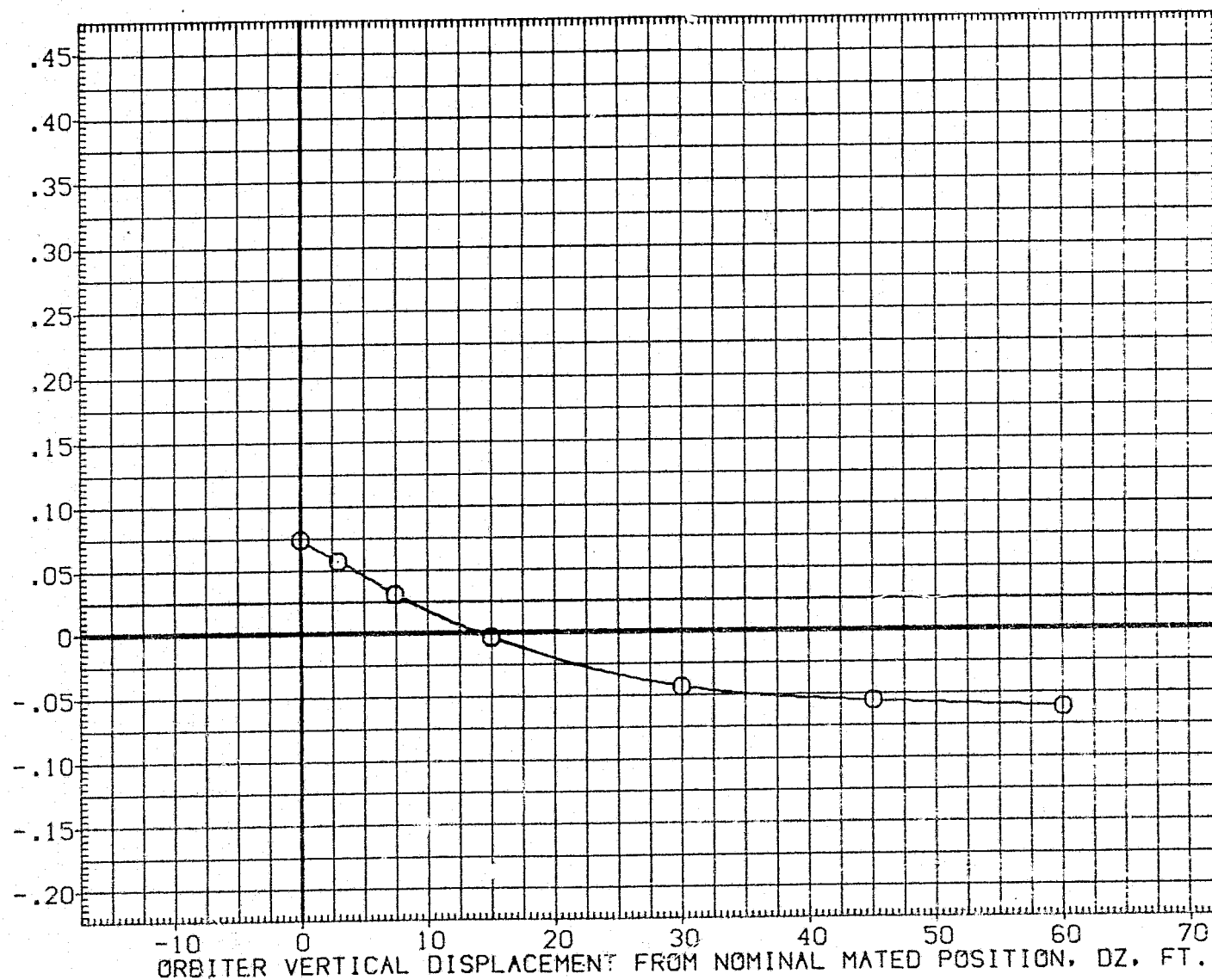


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

CARRIER DATA (MGN140)

SYMBOL		PARAMETRIC VALUES			
○	ALPHA0 10.000	ALPHAC 4.000	BETAC 5.000		
		ELV-1B .000	ELV-0B 3.000		
		ELEVON 5.000	MACH .600		
		BETA0 .000	PHI .000		
		DY 10.000	DX 10.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRF	1339.9000	IN.XC
YMRF	.0000	IN.YC
ZMRF	190.9000	IN.ZC
SCALE	.0300	

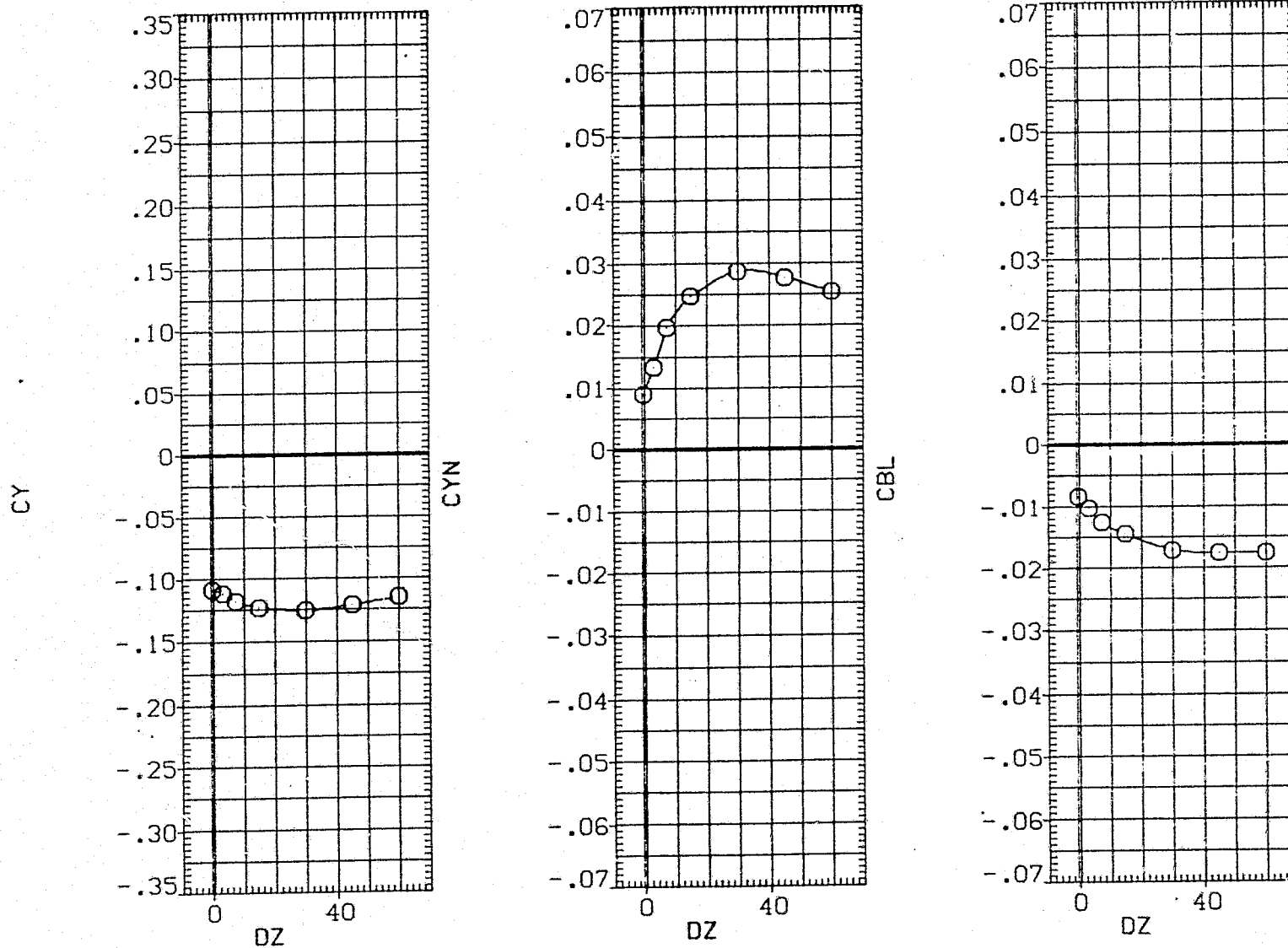


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	ELV-IB	ELEVON	BETAO	DY	PARAMETRIC VALUES	BETAC	ELV-OB	MACH	PHI	DX
○	10.000	4.000	.000	5.000	.000	10.000	5.000	3.000	.600	.000	10.000	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

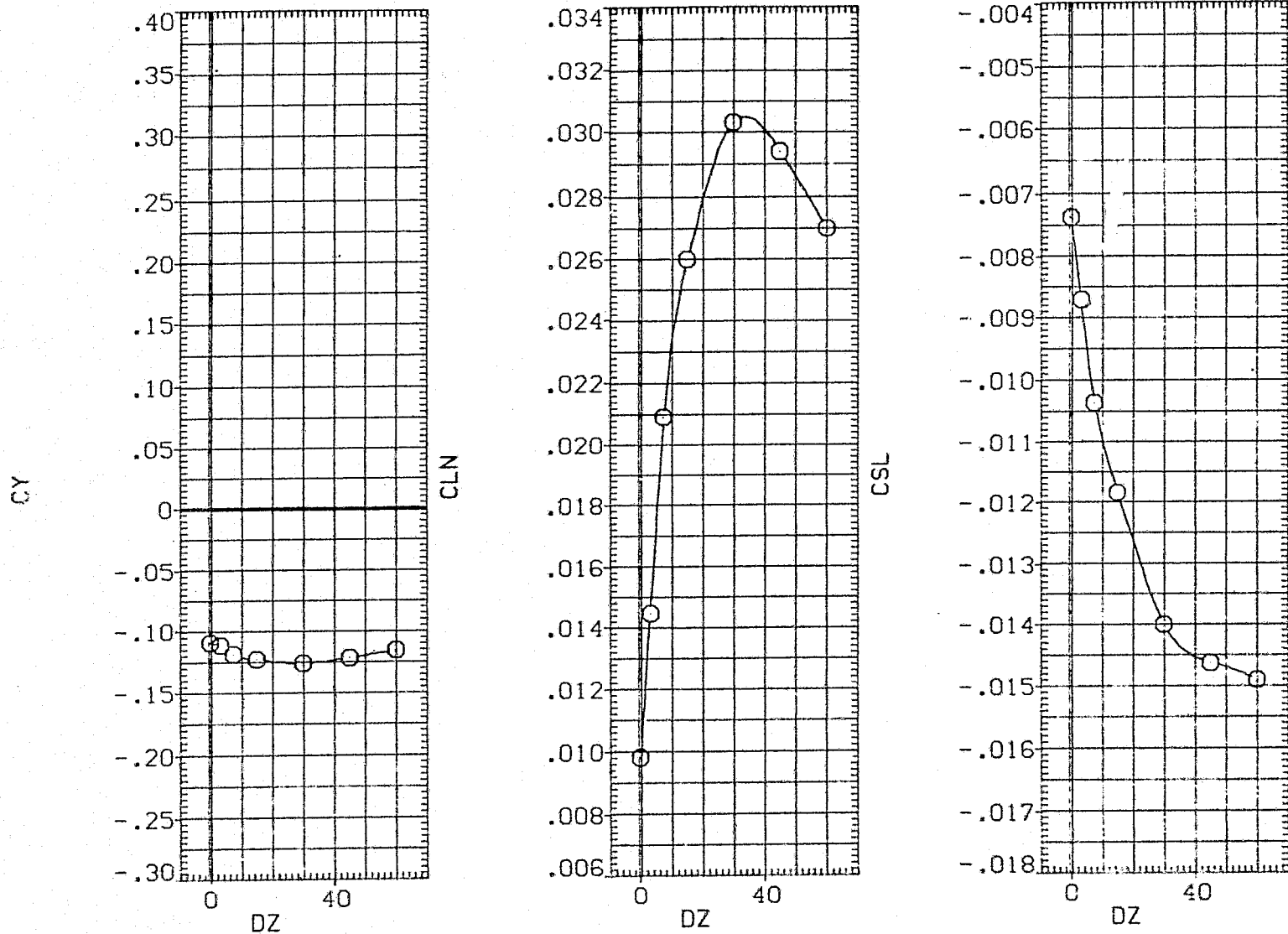


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (140 - 036) (UGN140)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

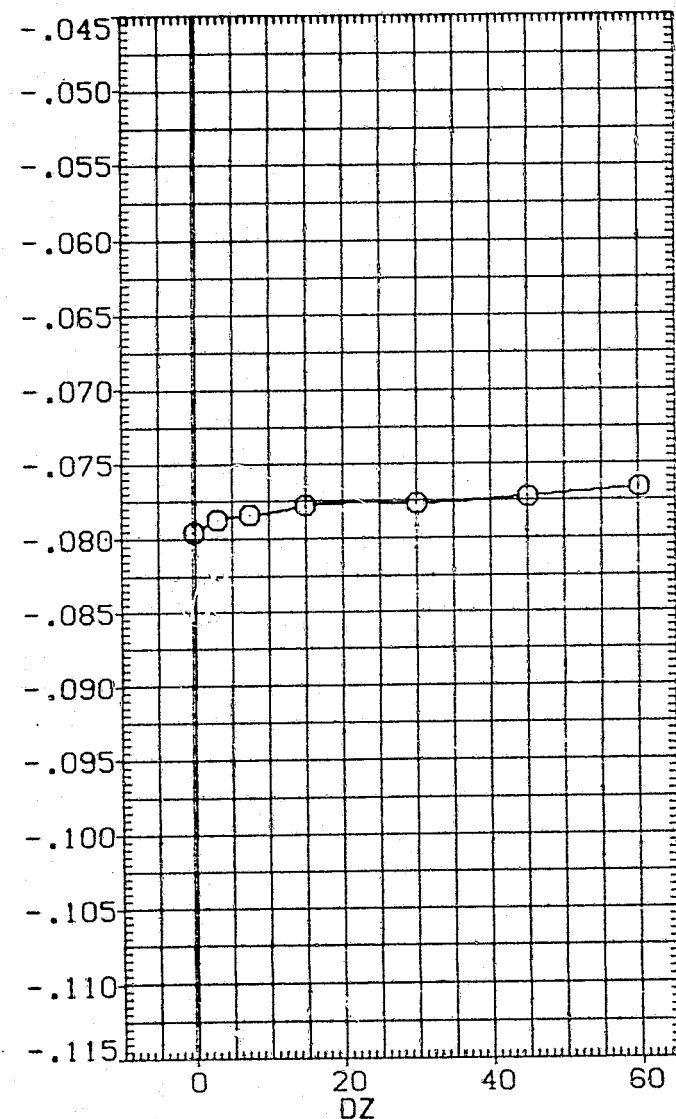
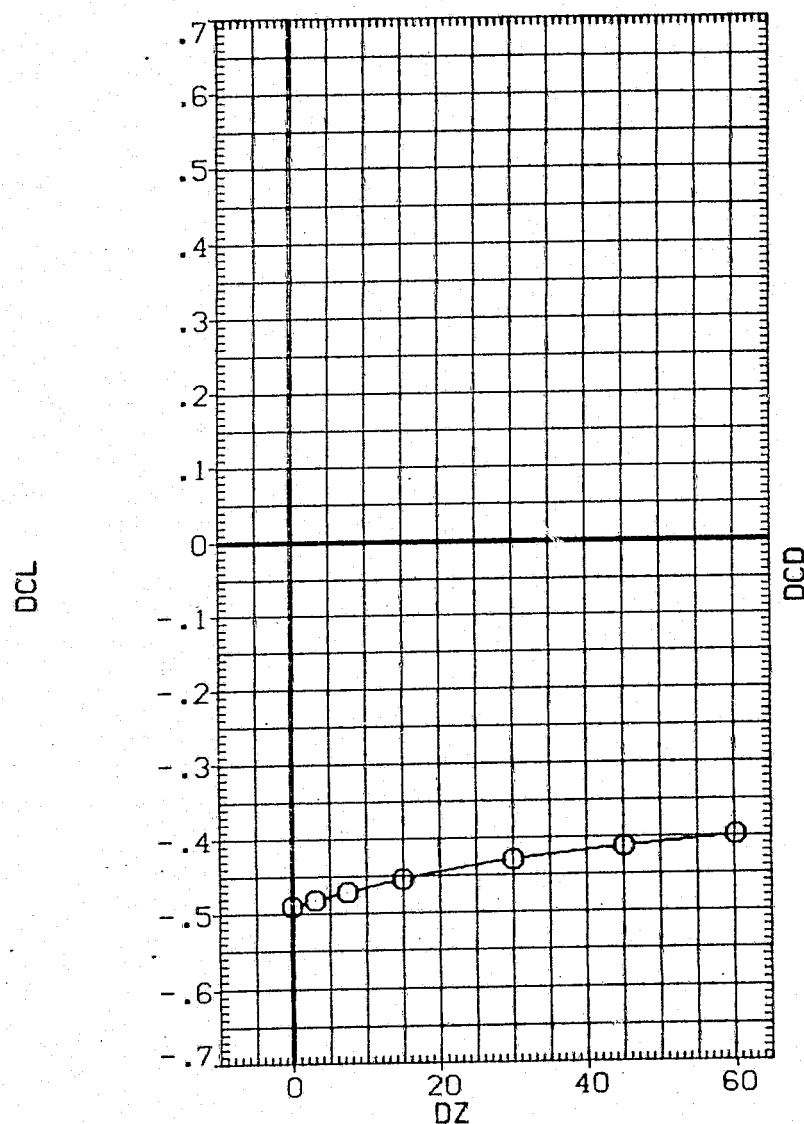


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETAO	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

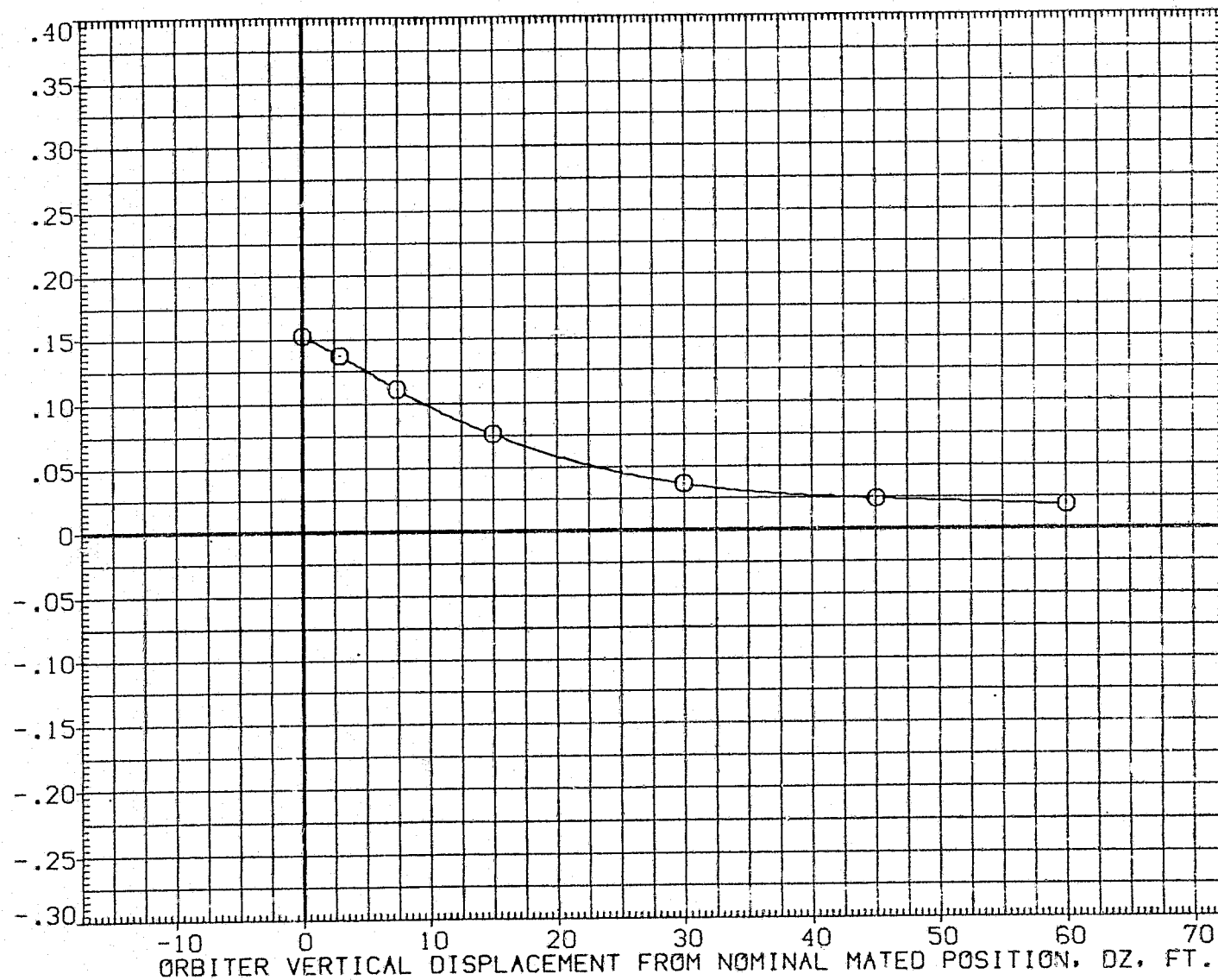


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 02 S1) - (747/1)

D/S (140 - 036) (UGN140)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
O	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

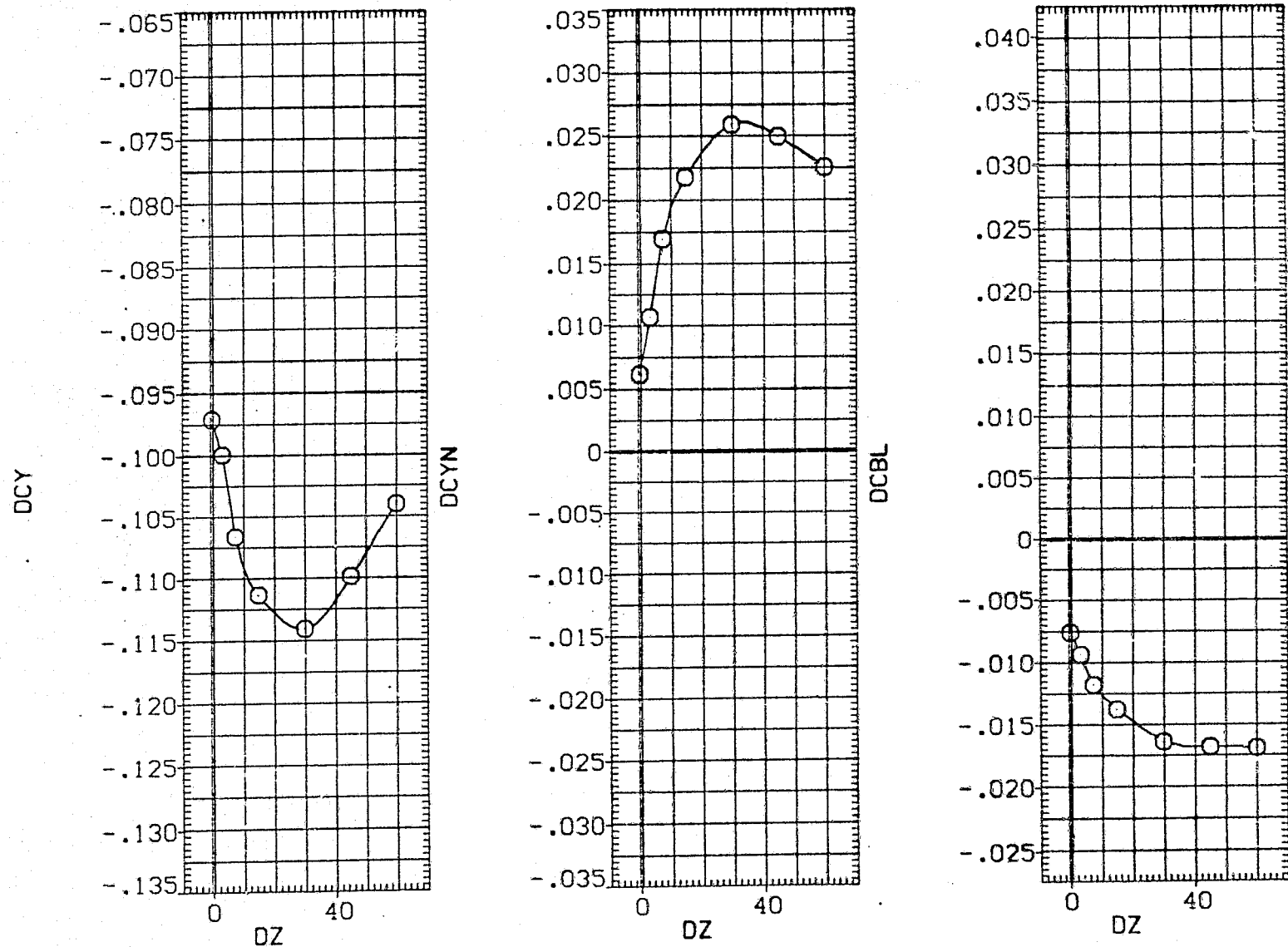


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES		
○	10.000	4.000	BETAC	5.000	
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

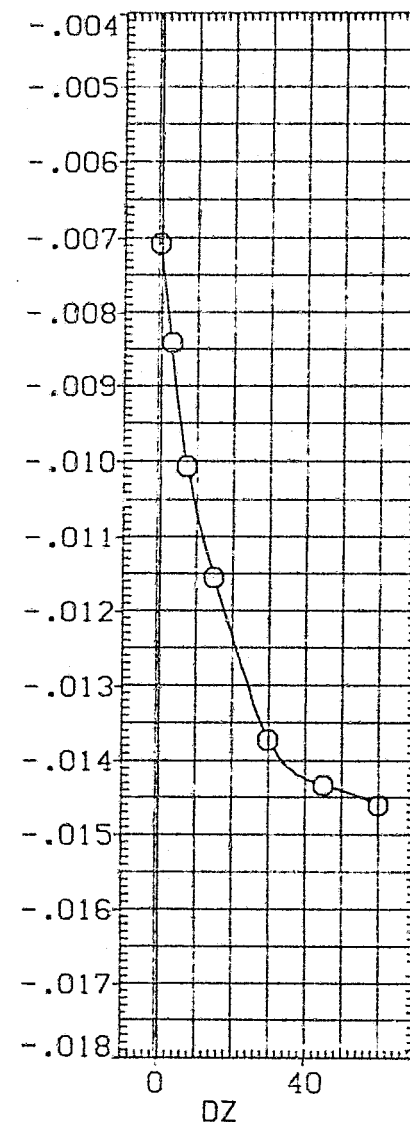
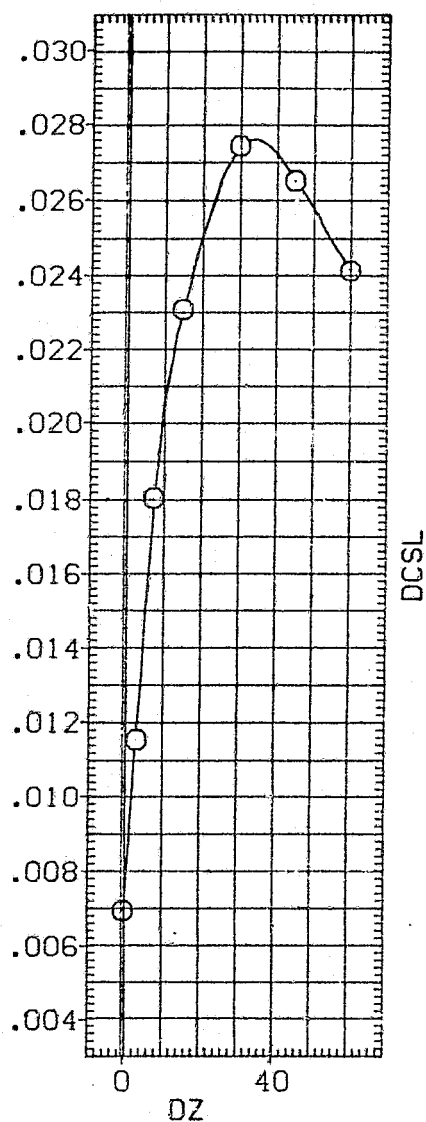
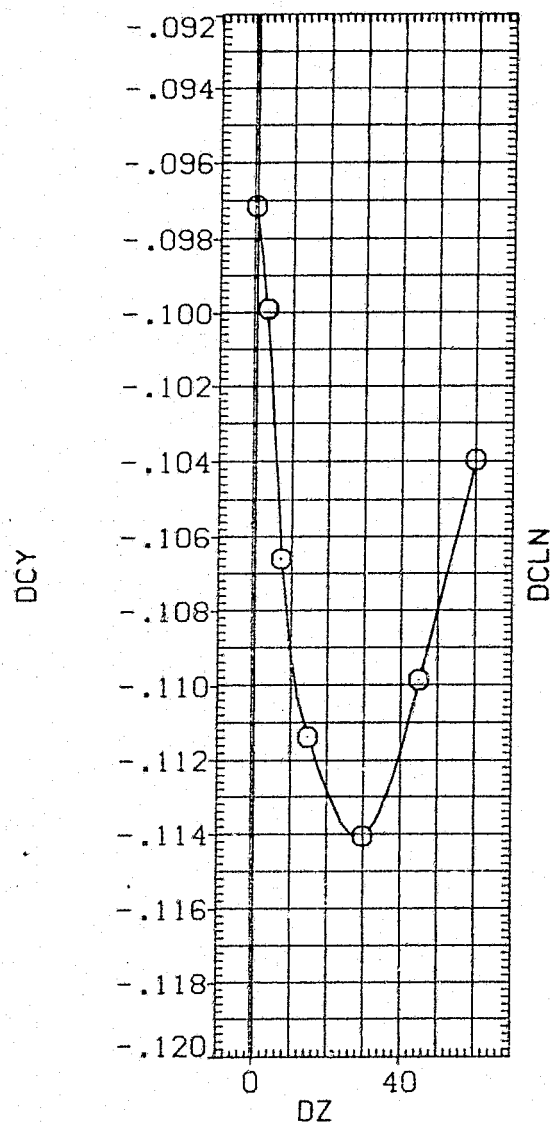


FIG 28 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN126)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.XC
YMRP	.0000	IN.YO
ZMRP	375.0000	IN.ZO
SCALE	.0300	

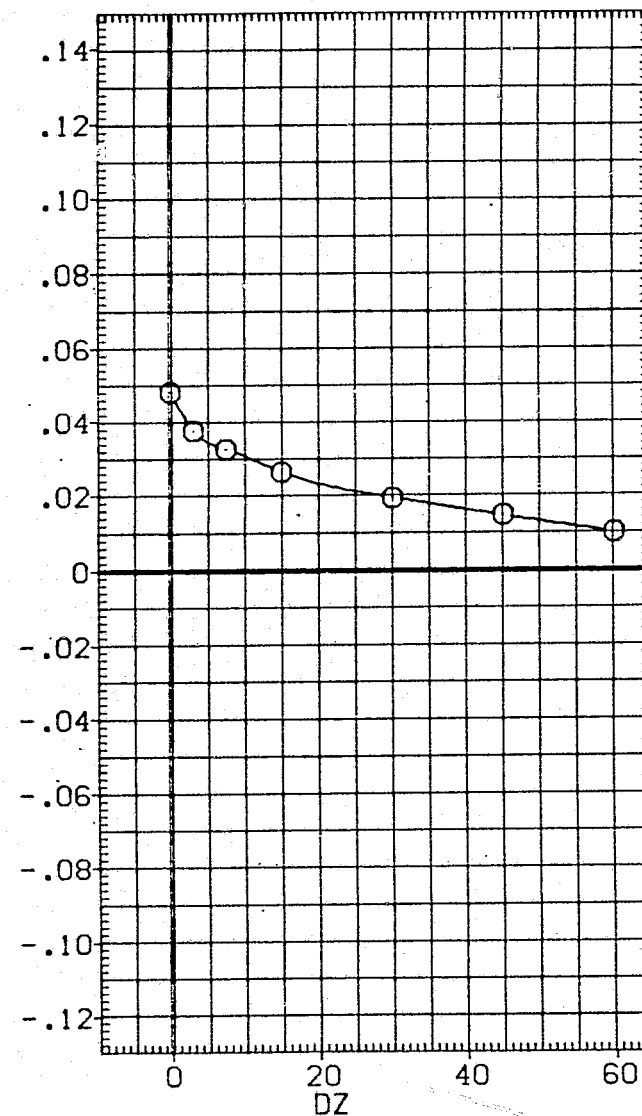
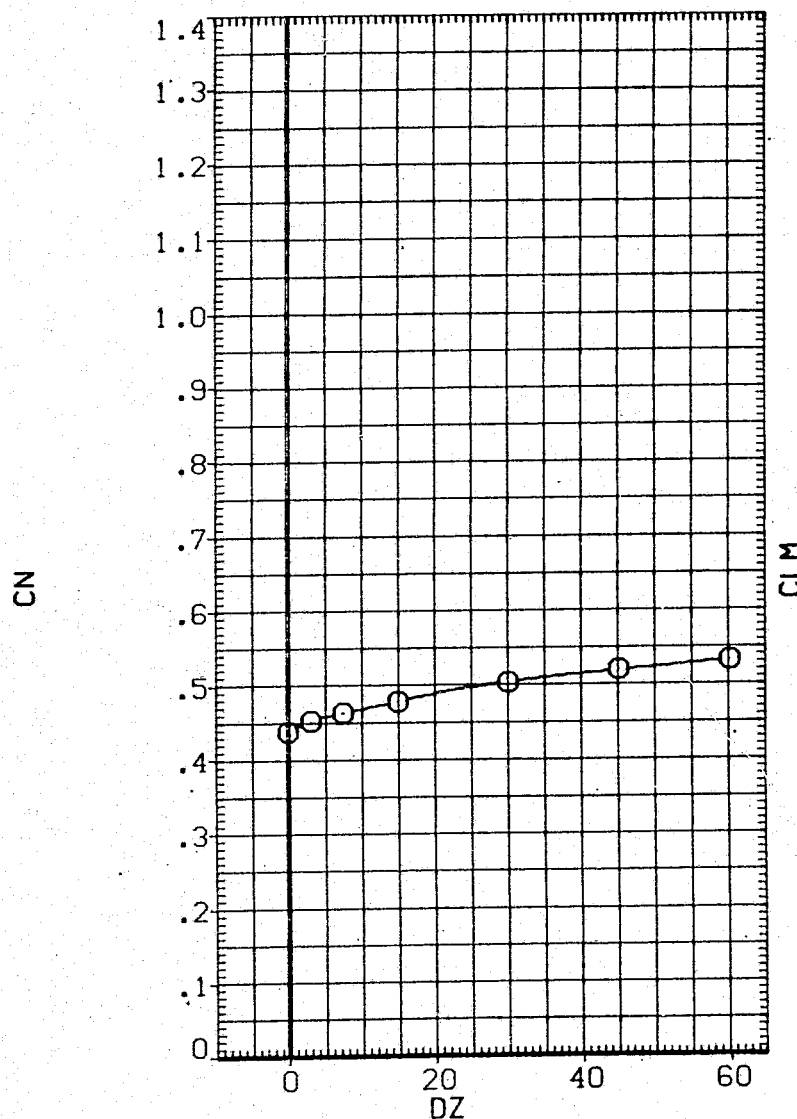


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL		PARAMETRIC VALUES			
ALPHA0	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

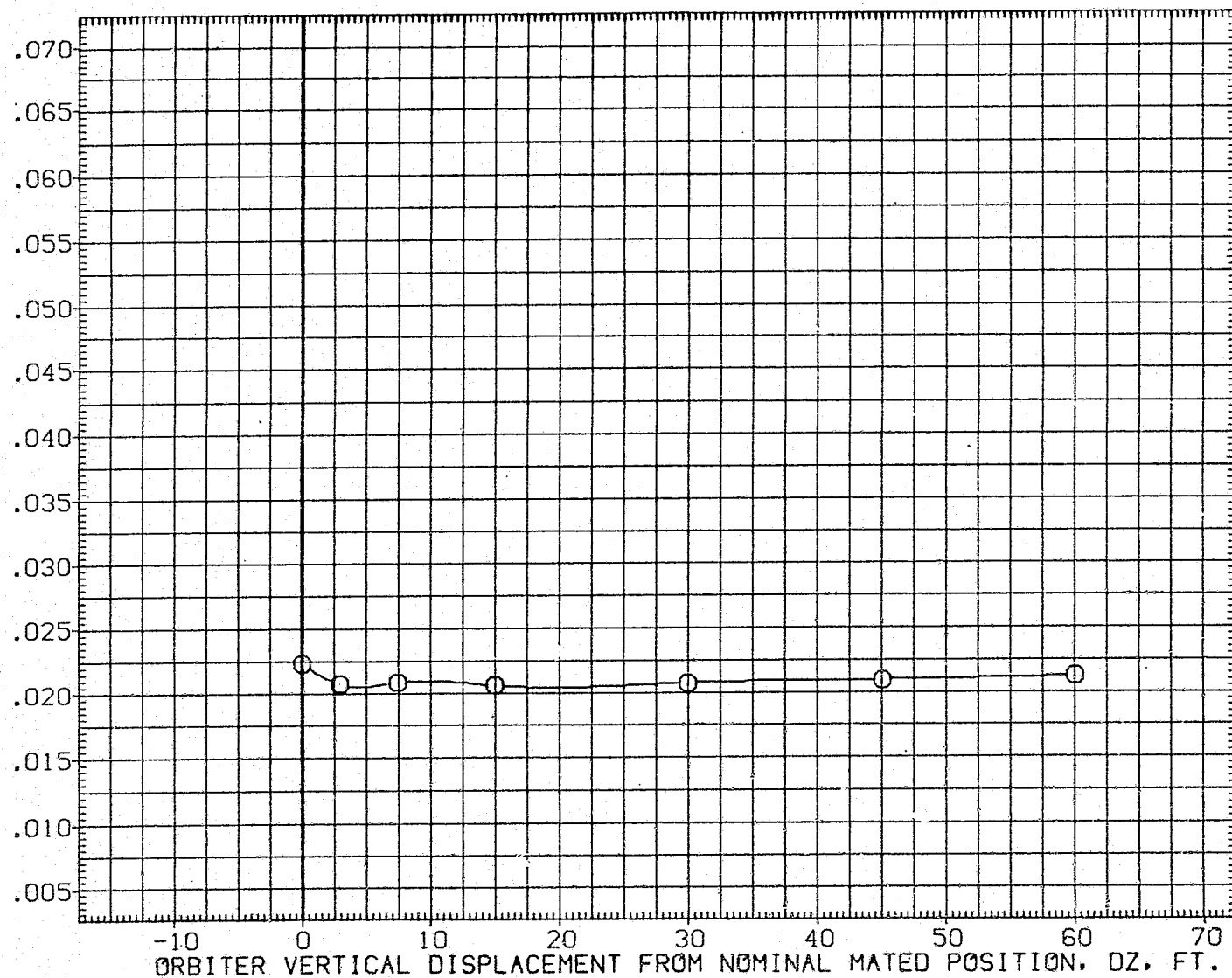


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA(NGN126)

SYMBOL		PARAMETRIC VALUES				
○	ALPHA0	10.000	ALPHAC	4.000	BETAC	-5.000
			ELV-1B	.000	ELV-0B	3.000
			ELEVON	5.000	MACH	.600
			BETA0	.000	PHI	.000
			DY	.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

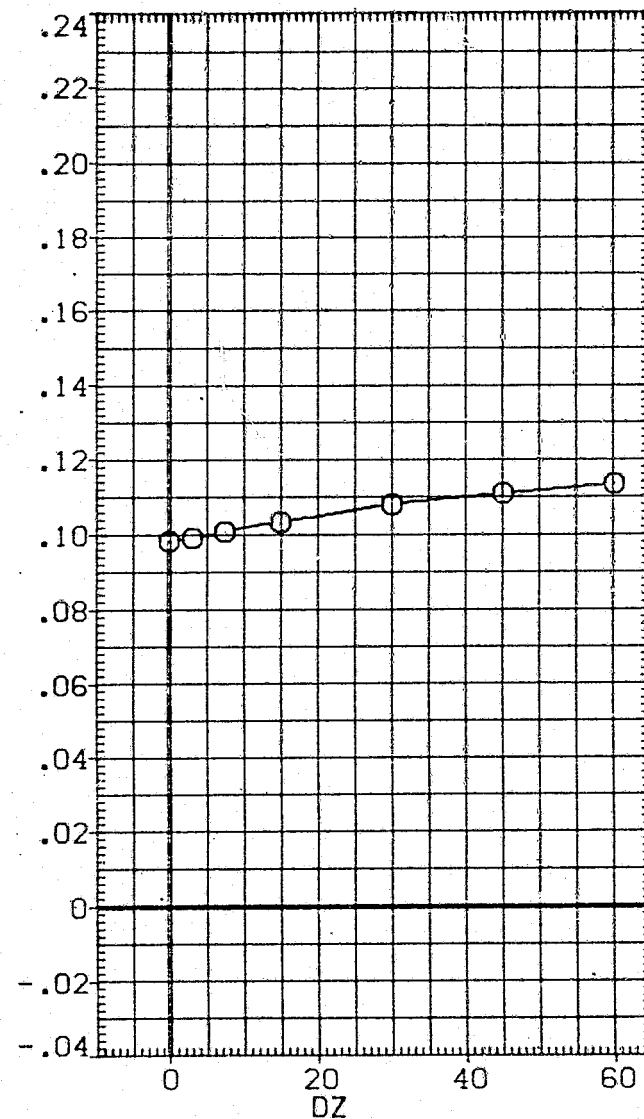
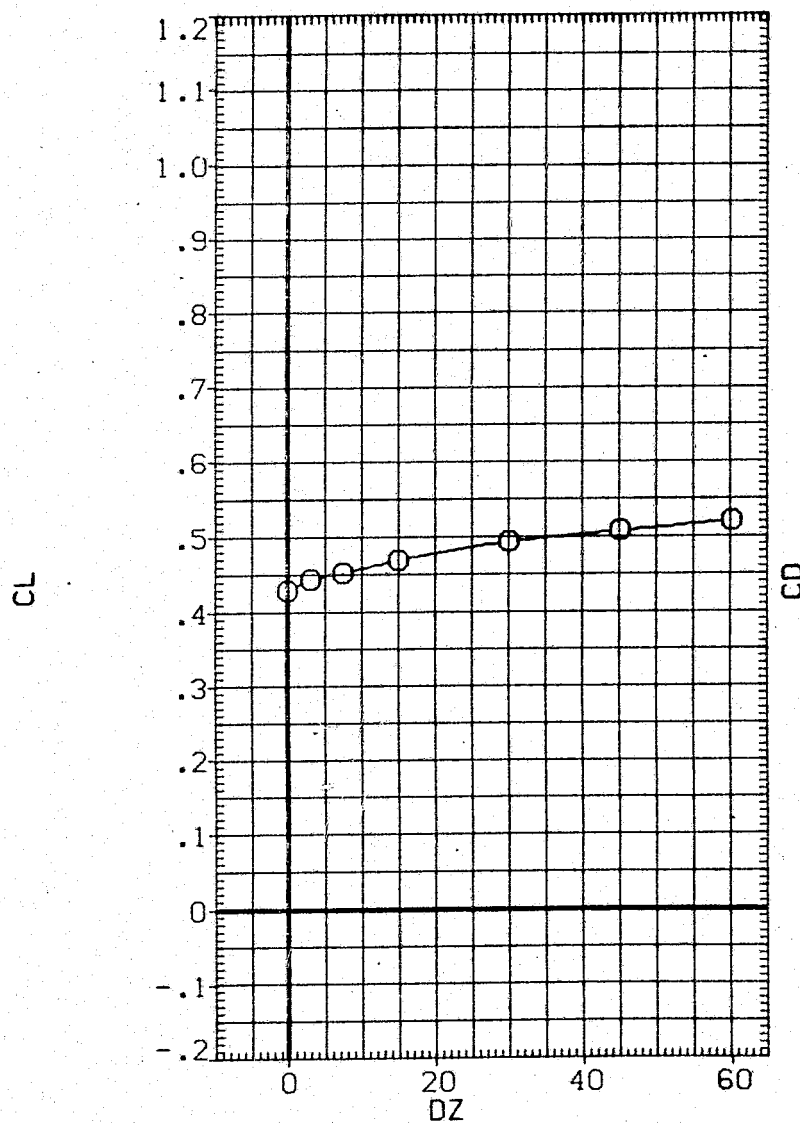


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC
○	10.000	4.000	BETAC	-5.000
		.000	ELV-0B	3.000
		5.000	MACH	.600
		.000	PHI	.000
		.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

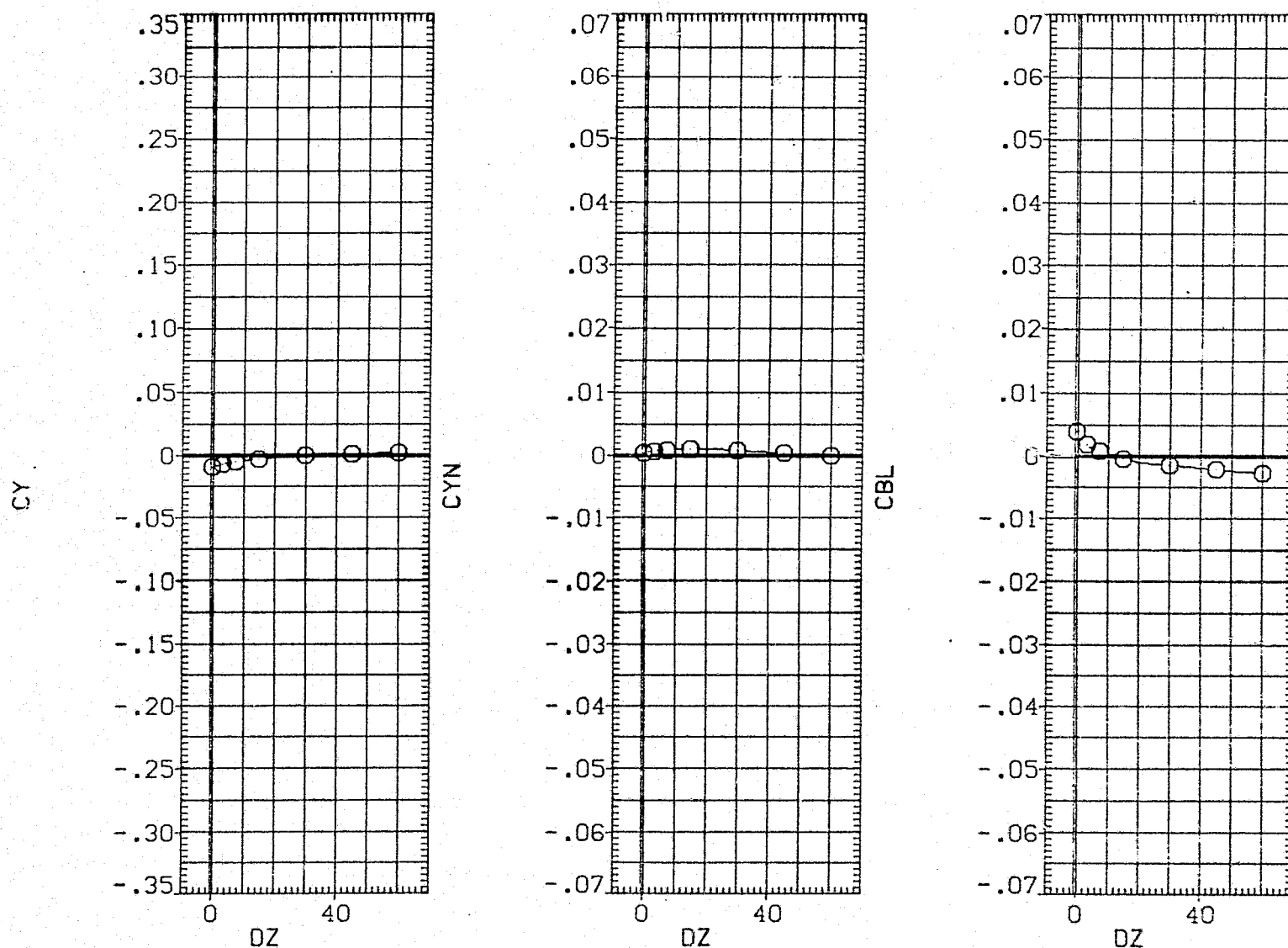


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (126 - 018)(VGN126)

SYMBOL
○ALPHA0
10.000

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

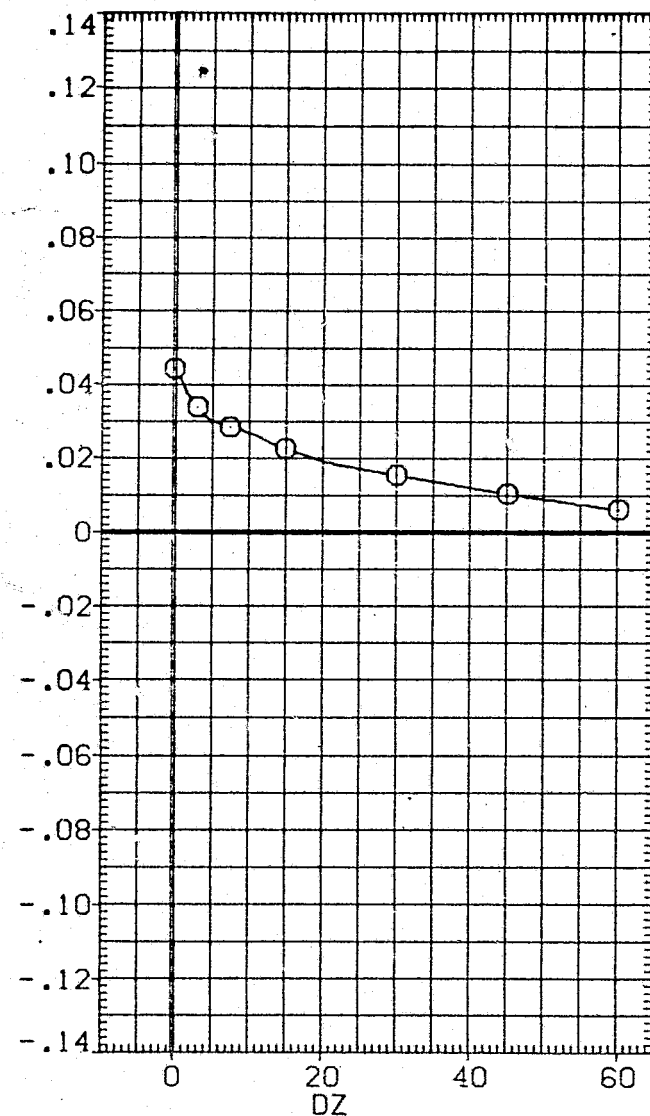
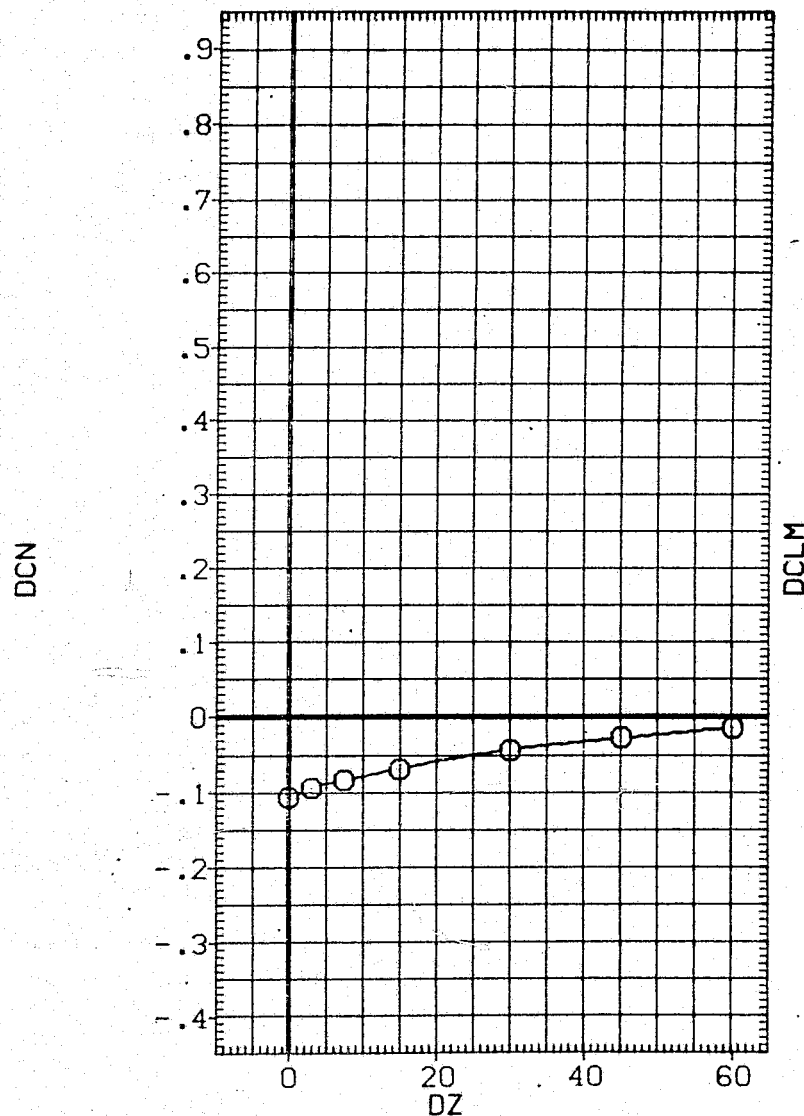


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL
O

ALPHA0
10.000

PARAMETRIC VALUES			
ALPHA0	4.000	BETAC	-5.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

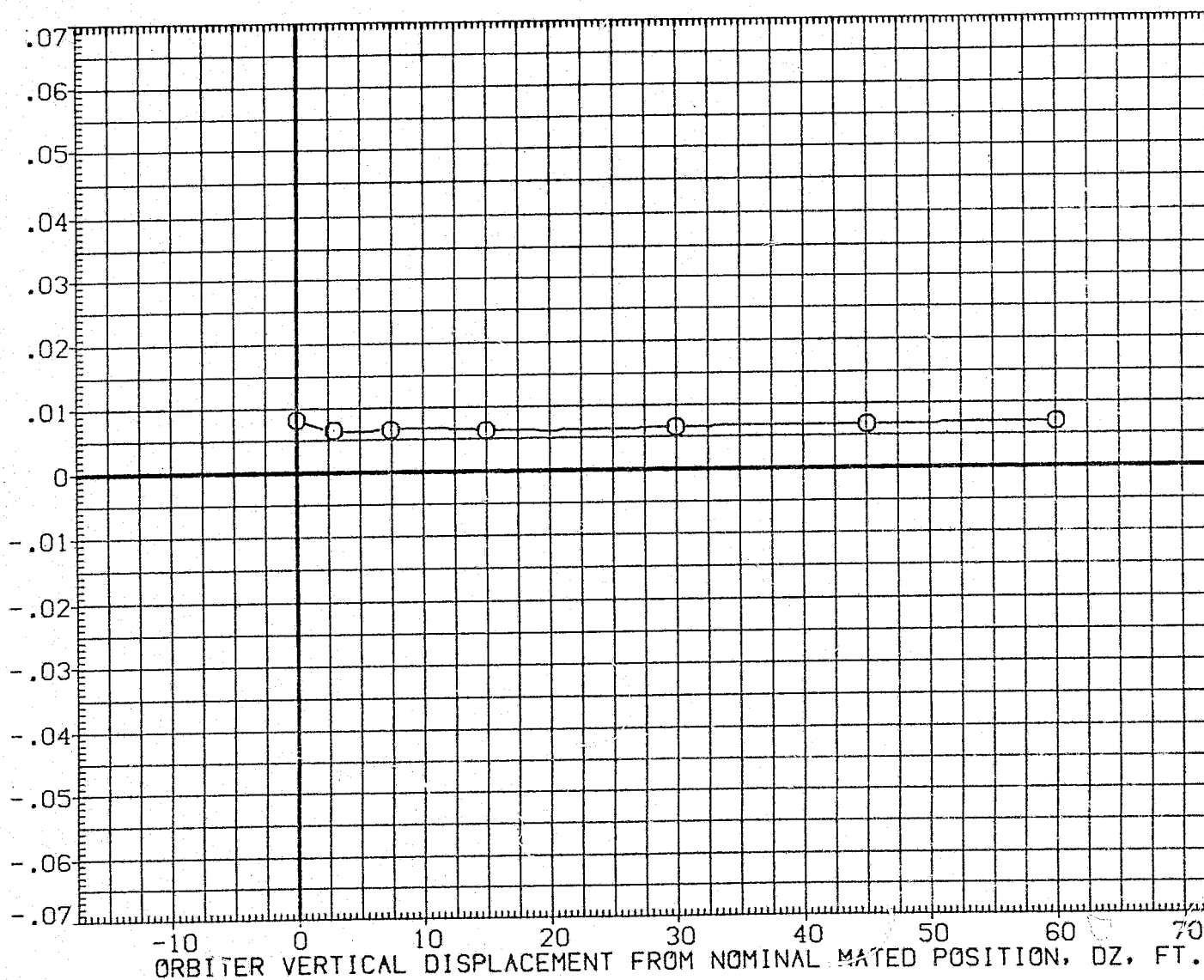


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (126 - 018)(VGN126)

SYMBOL
O 10.000

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	-5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

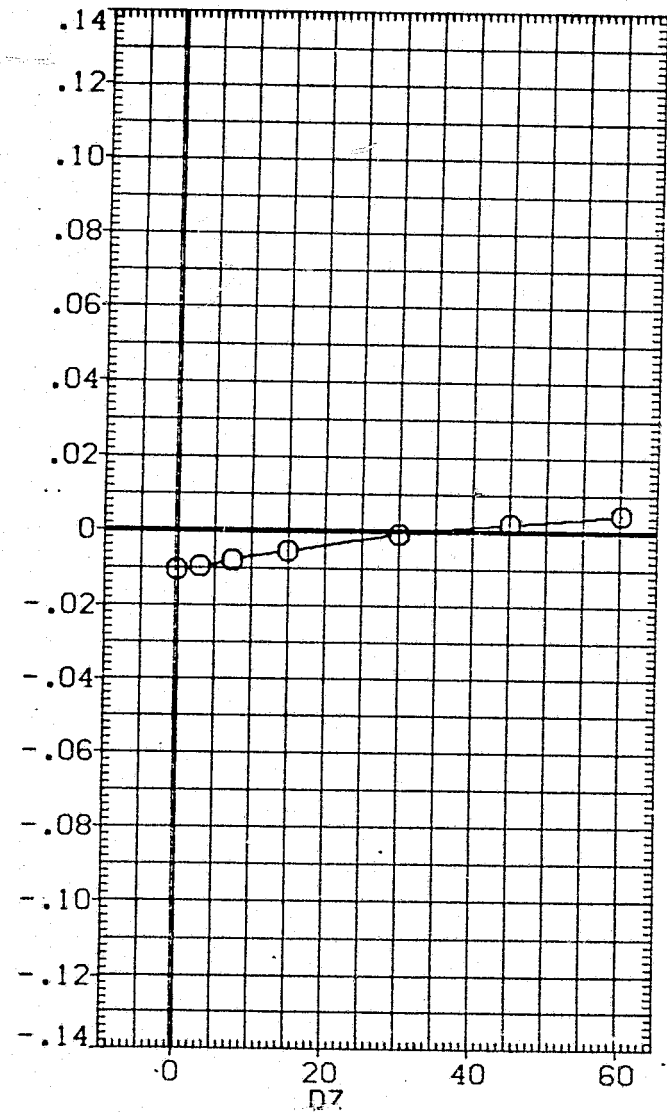
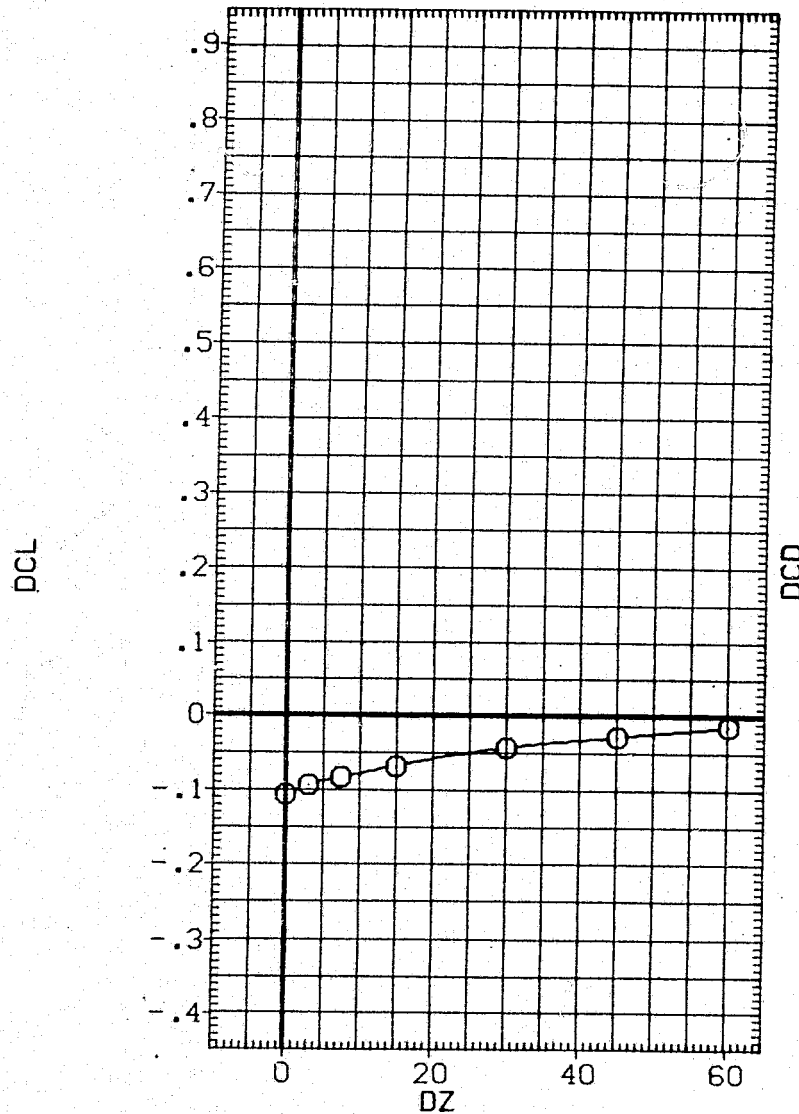


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL		PARAMETRIC VALUES				
O	ALPHA0	10.000	ALPHAC	4.000	BETAC	-5.000
			ELV-1B	.000	ELV-0B	3.000
			ELEVON	5.000	MACH	.600
			BETA0	.000	PHI	.000
			DY	.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

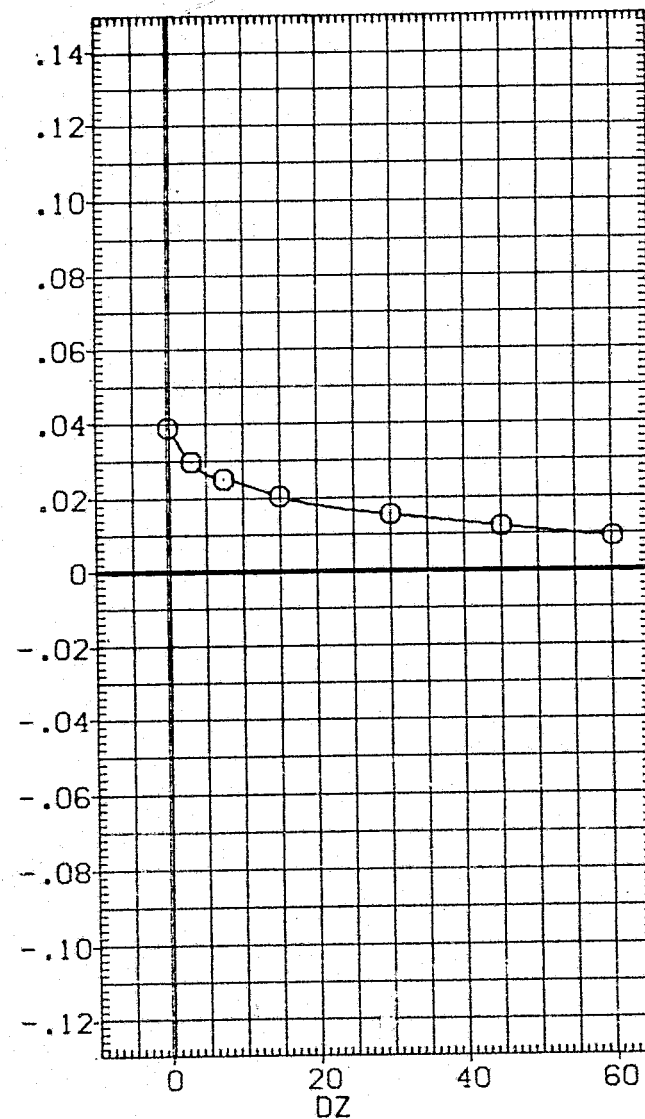
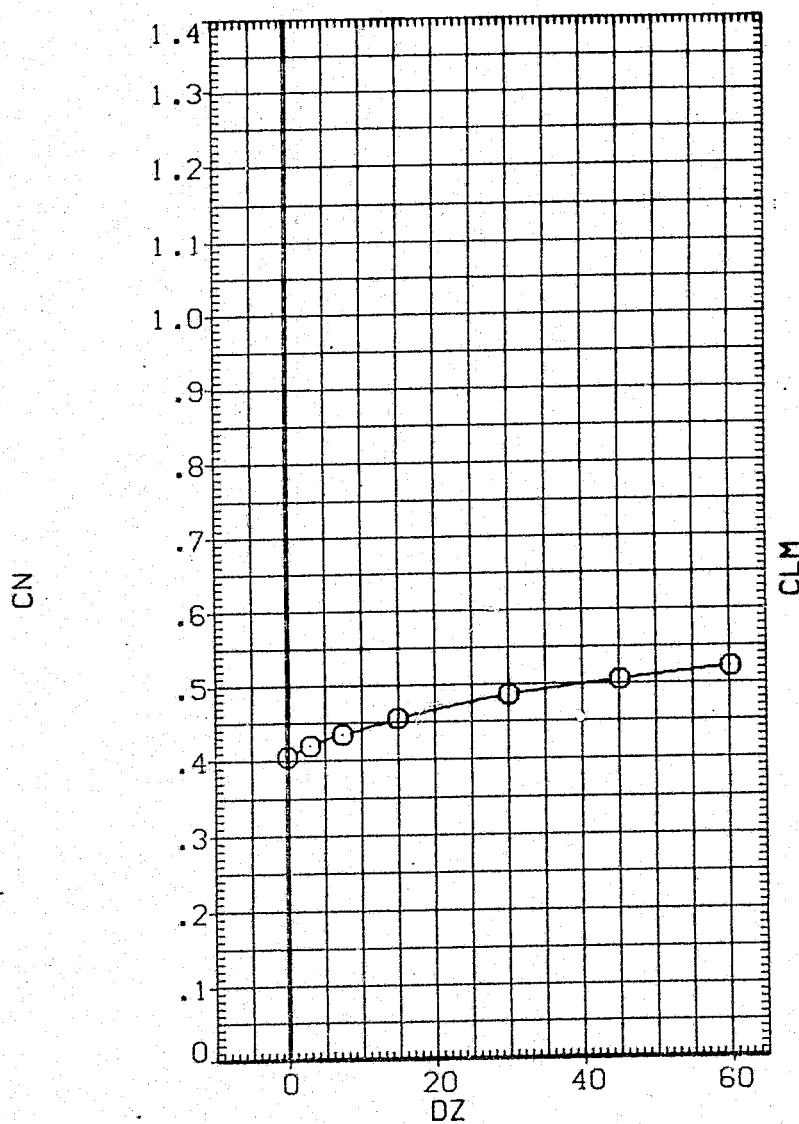


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA(NGN127)

SYMBOL
OALPHA0
10.000ALPHAC
ELV-1B
ELEVON
BETA0
DY

PARAMETRIC VALUES

4.000	BETAC	-5.000
.000	ELV-0B	3.000
5.000	MACH	.620
.000	PHI	.000
.000	DX	10.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

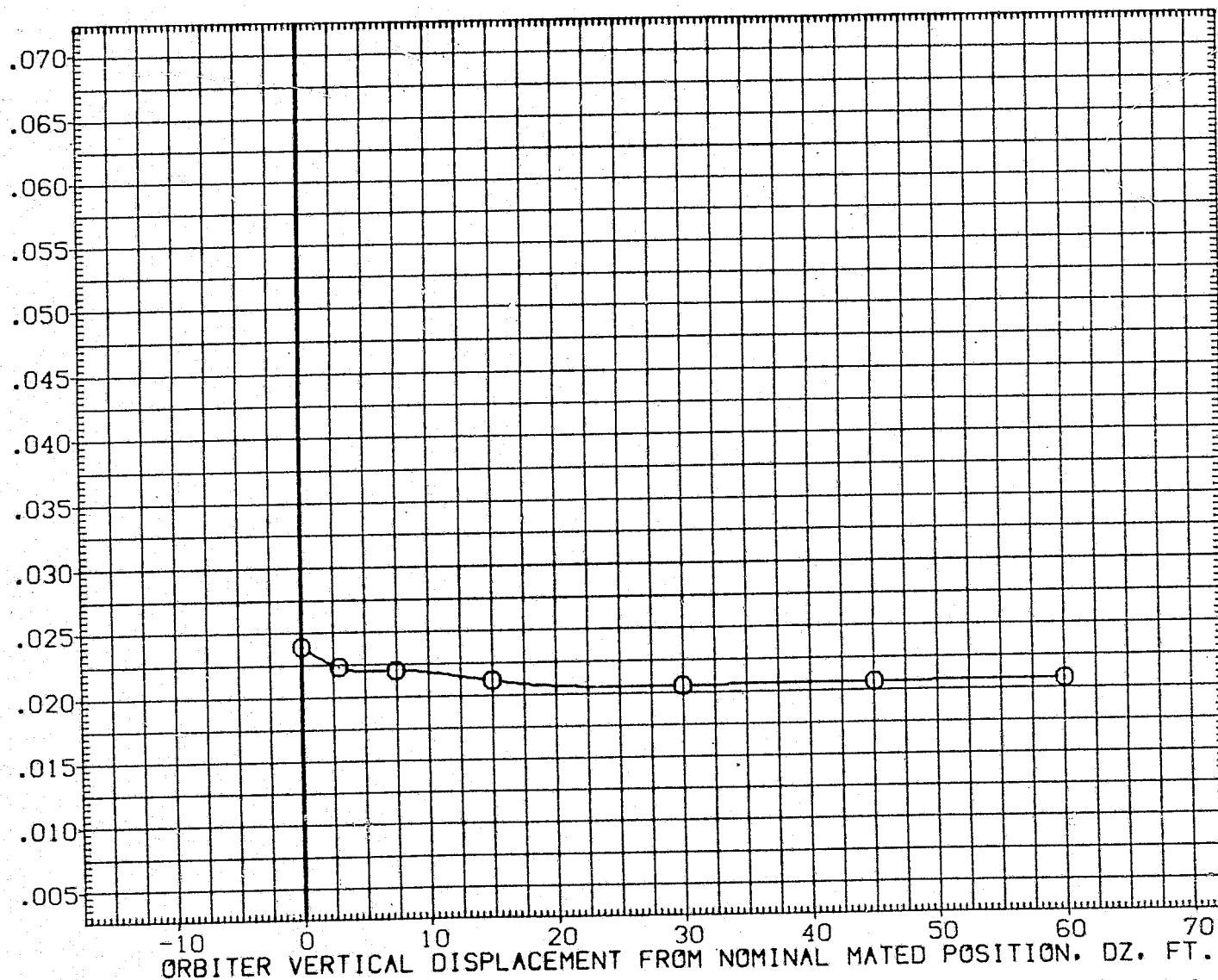


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		BY	.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

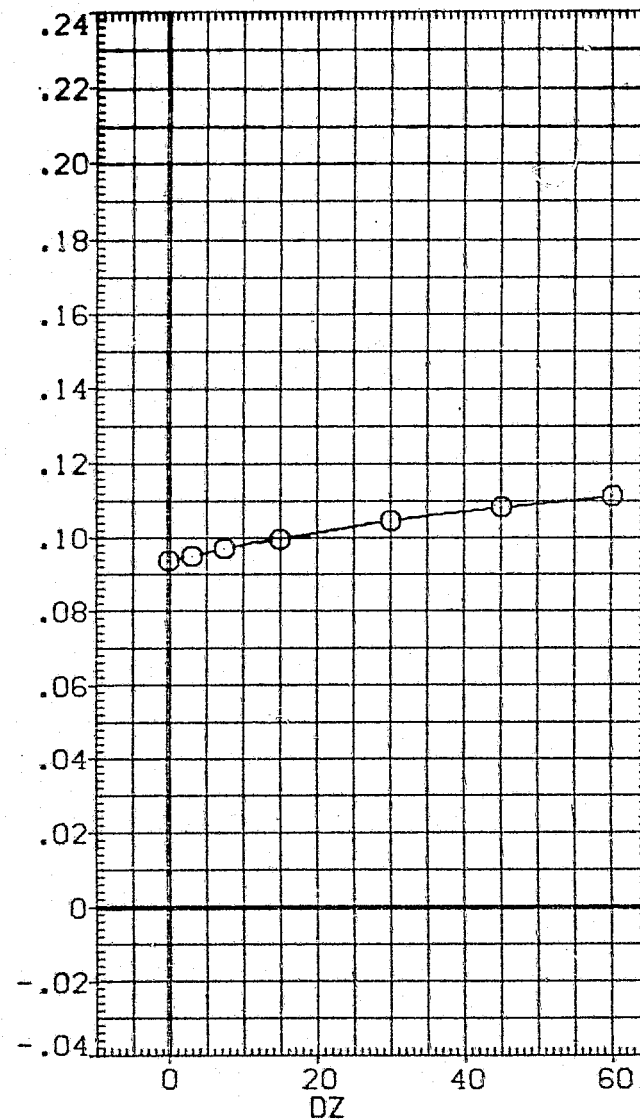
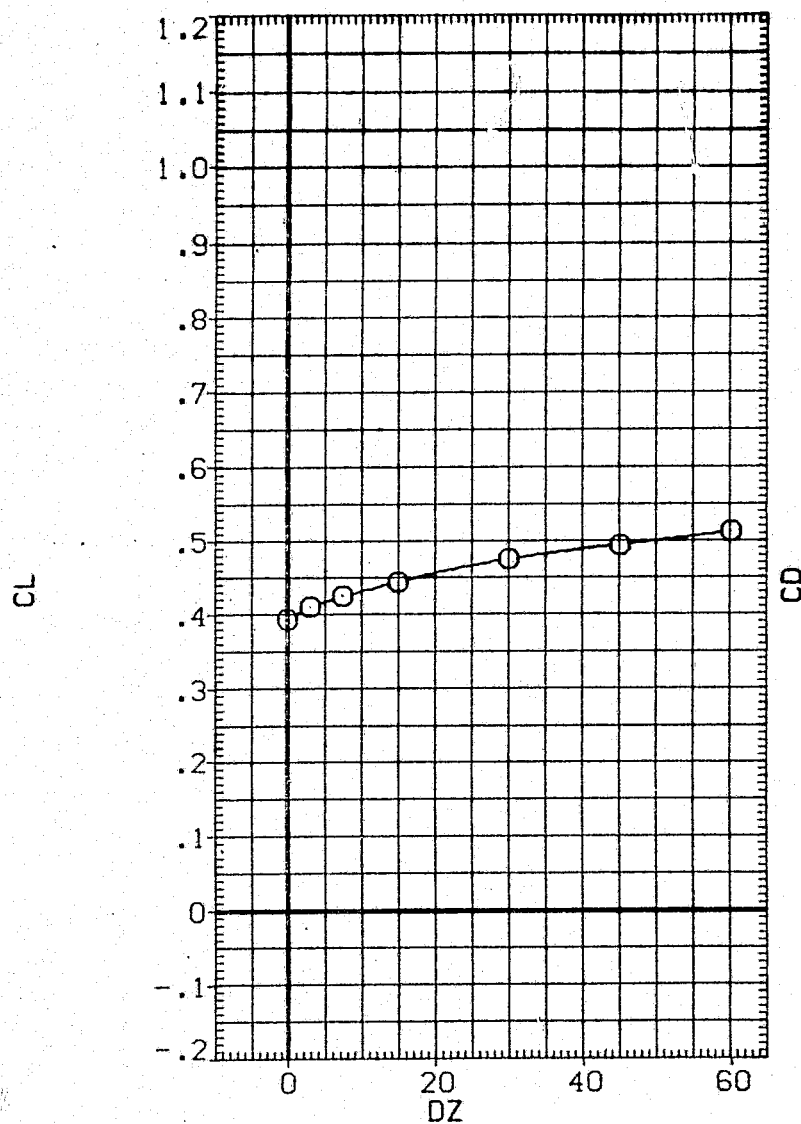


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN127)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

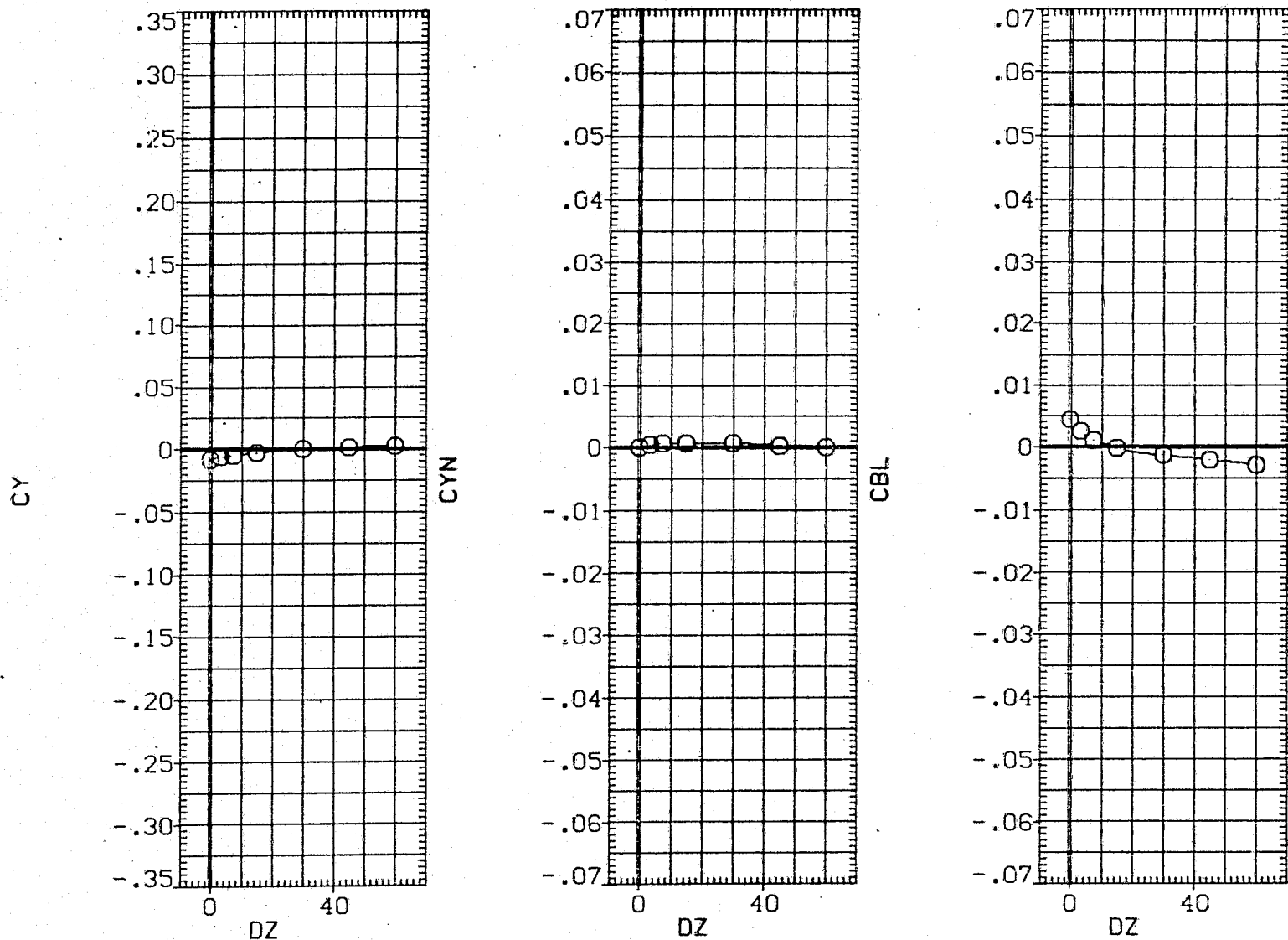


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL
○

ALPHA0
10.000

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	-5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
AMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

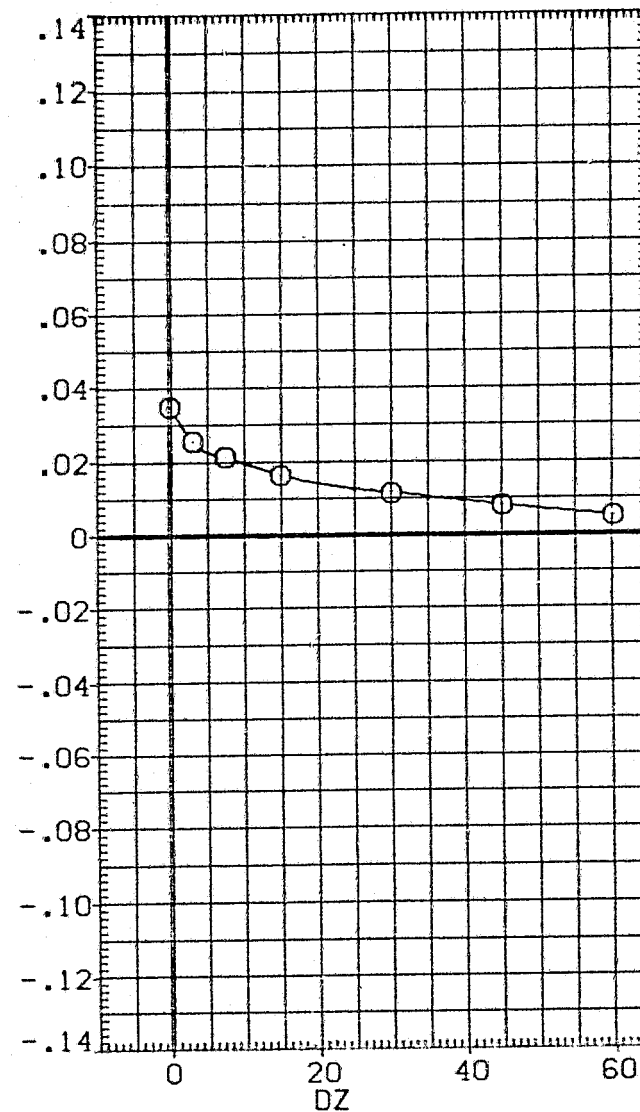
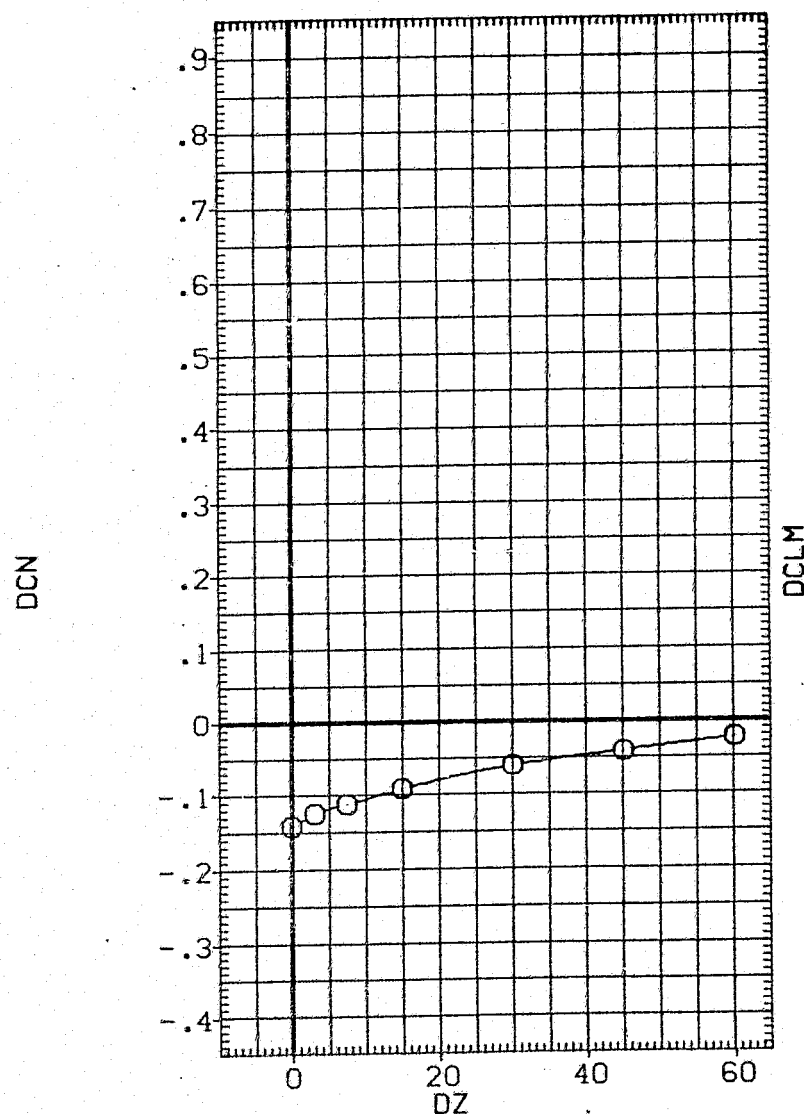


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (127 - 018)(VGN127)

SYMBOL
○ALPHA0
10.000ALPHAC
ELV-18
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000 BETAC -5.000
.000 ELV-08 3.000
5.000 MACH .600
.000 DX 10.000
.000 BETA0 .000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

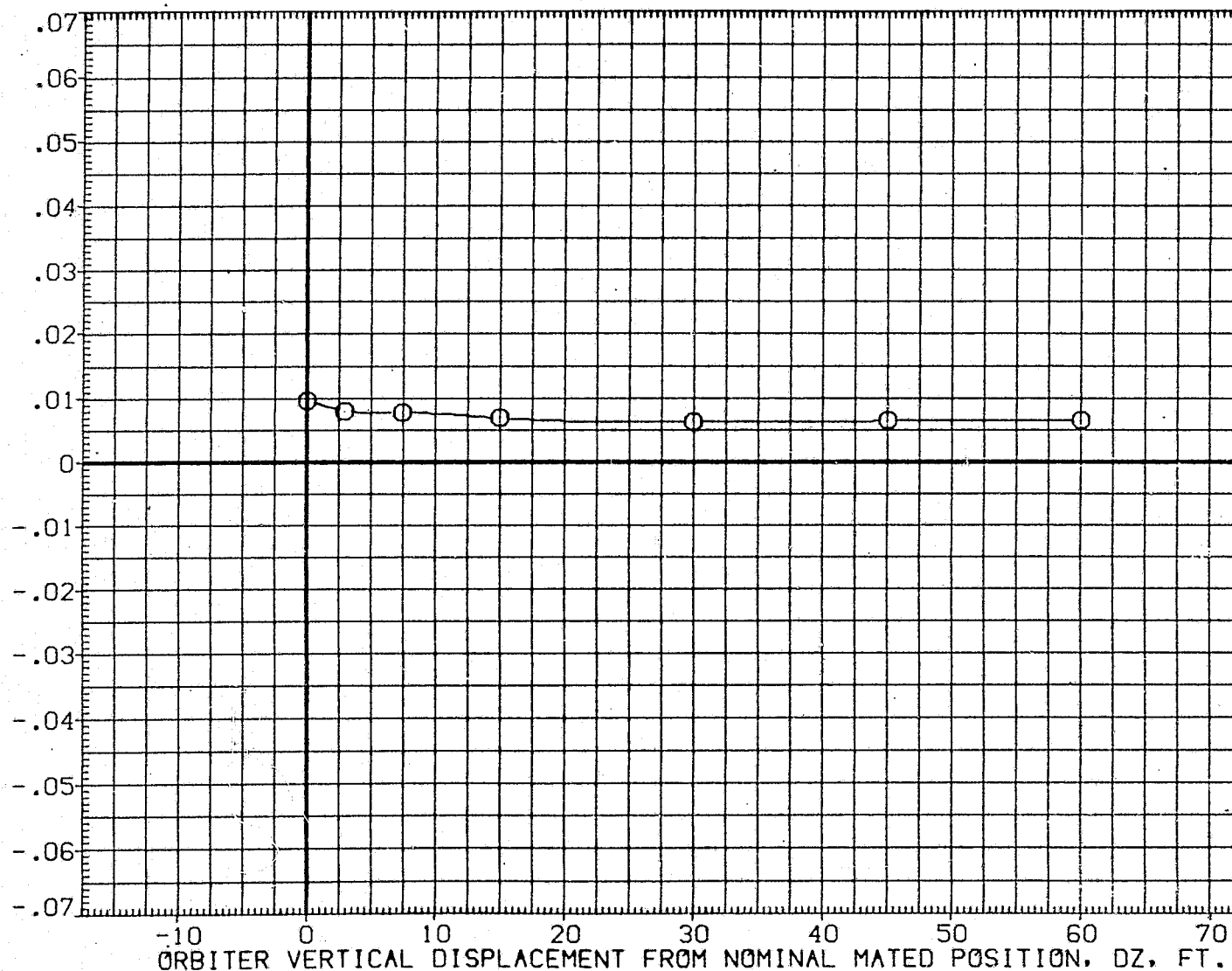


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL

○

ALPHA0

10.000

PARAMETRIC VALUES

ALPHA0	4.000	BETAC	-5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

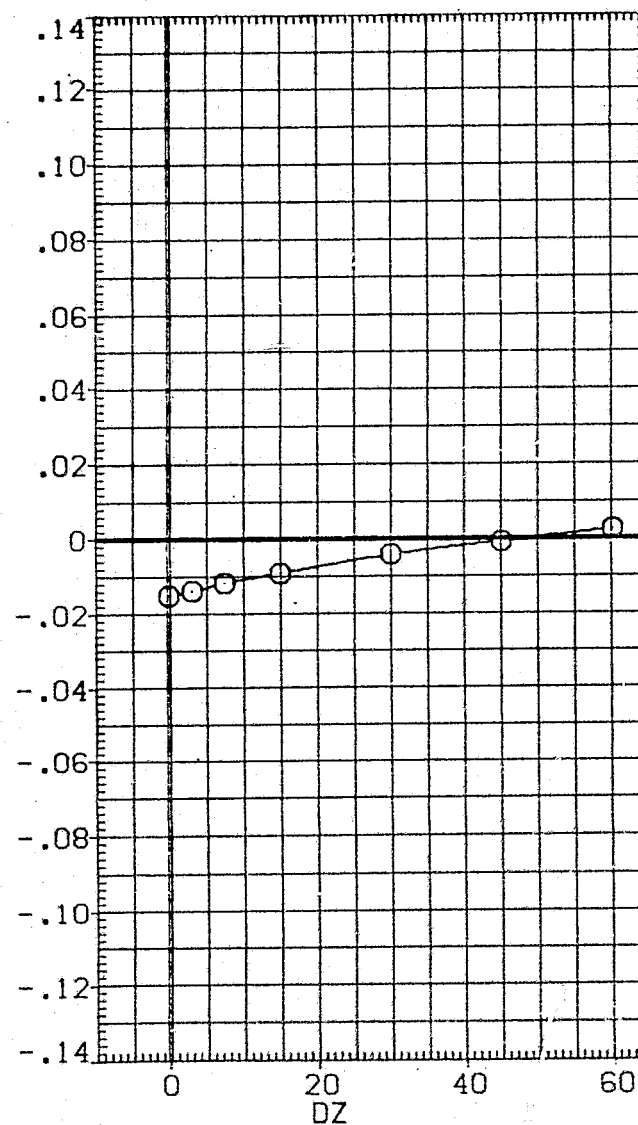
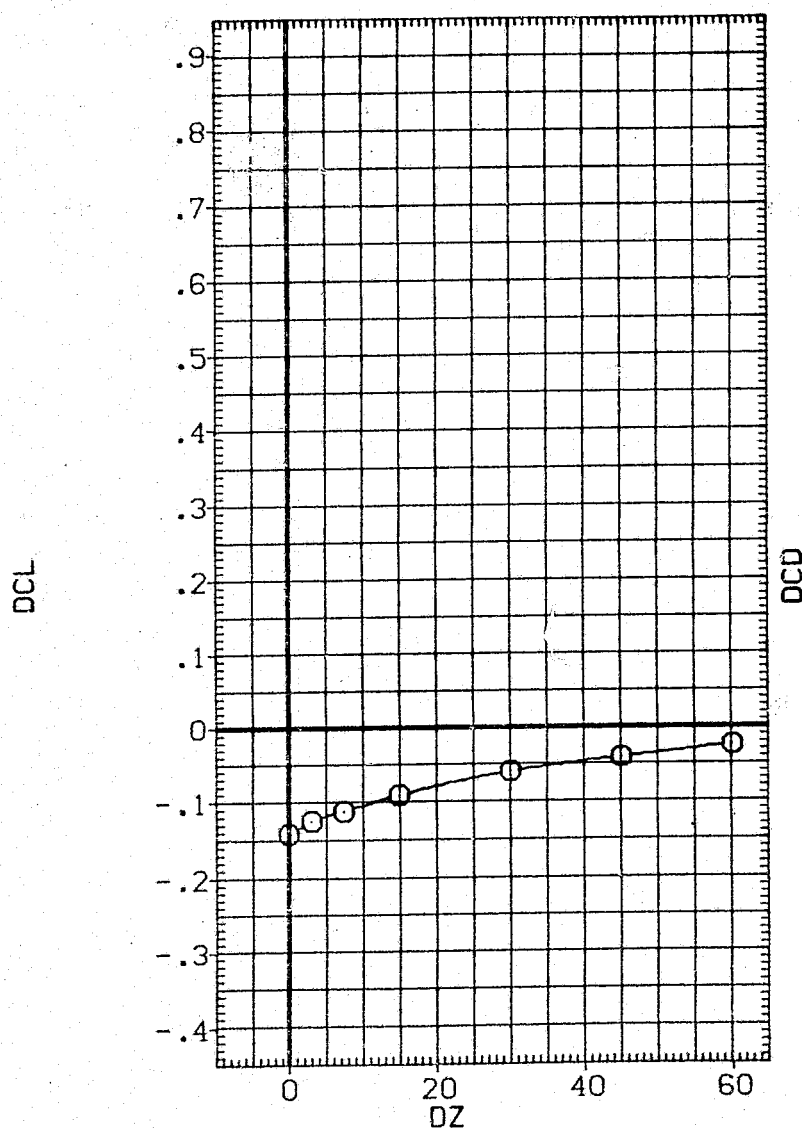


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN128)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
		ALPHAC	4.000	BETAC	-5.000
○	10.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	20.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

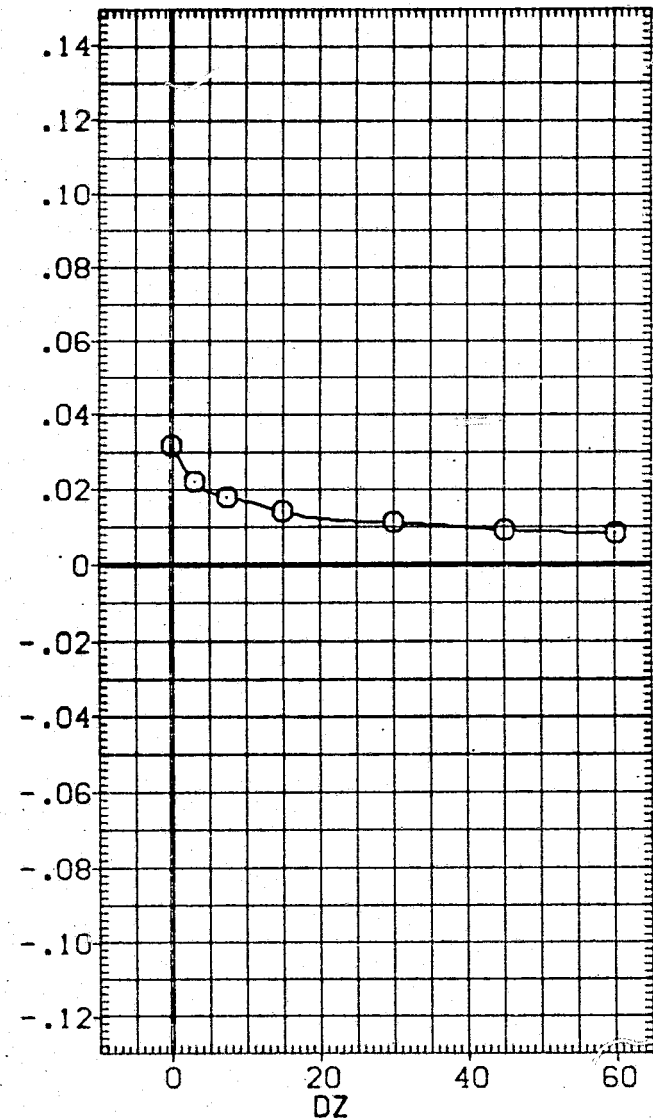
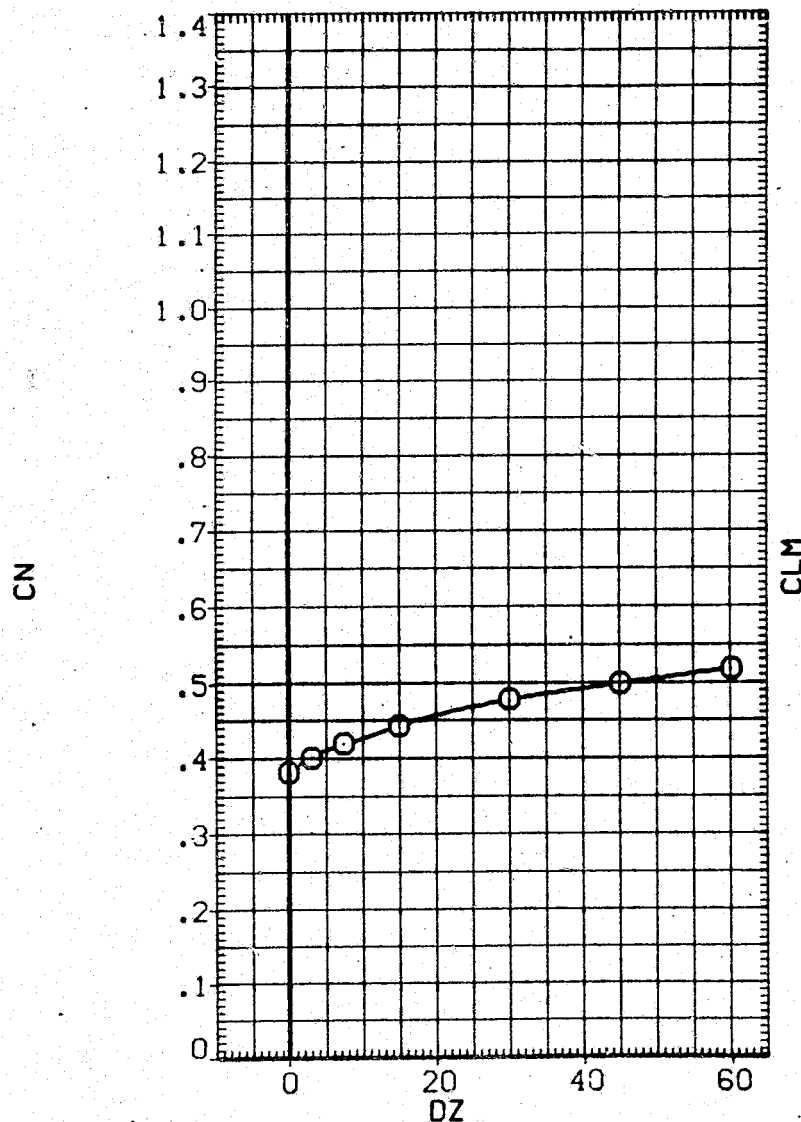


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN128)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	20.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

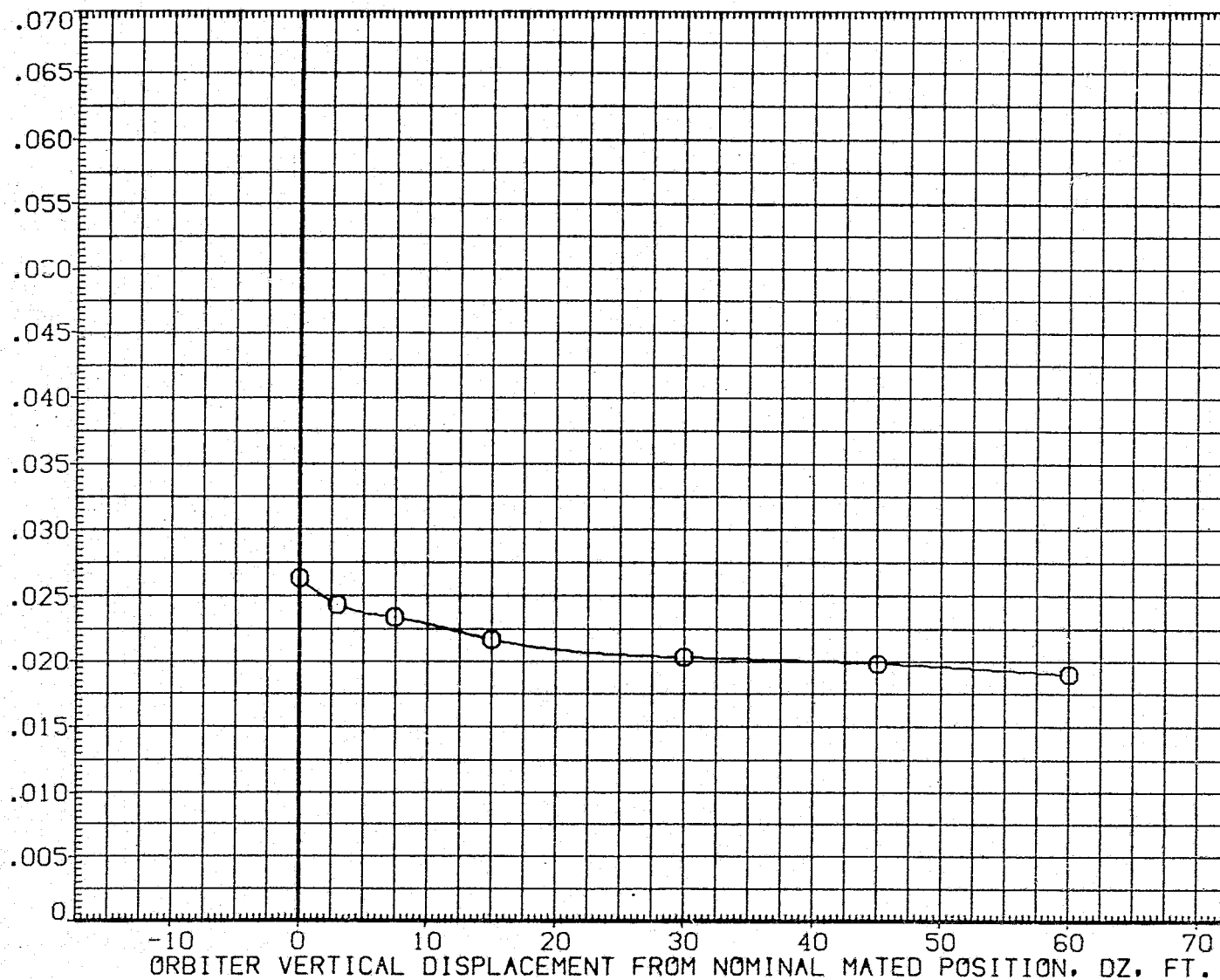


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN128)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	.000	DX	20.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

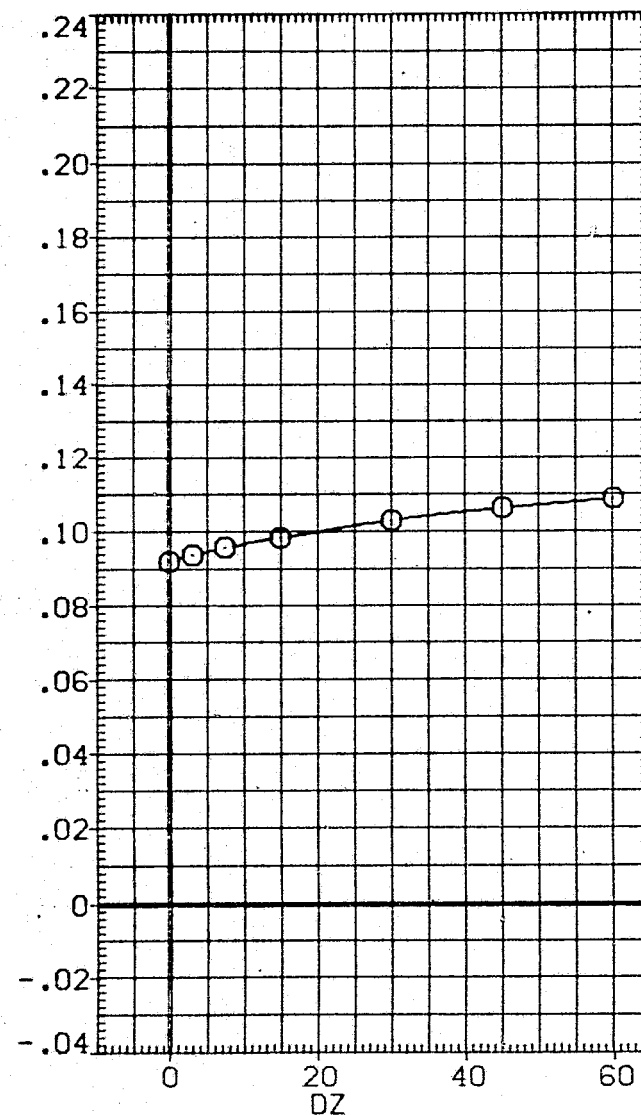
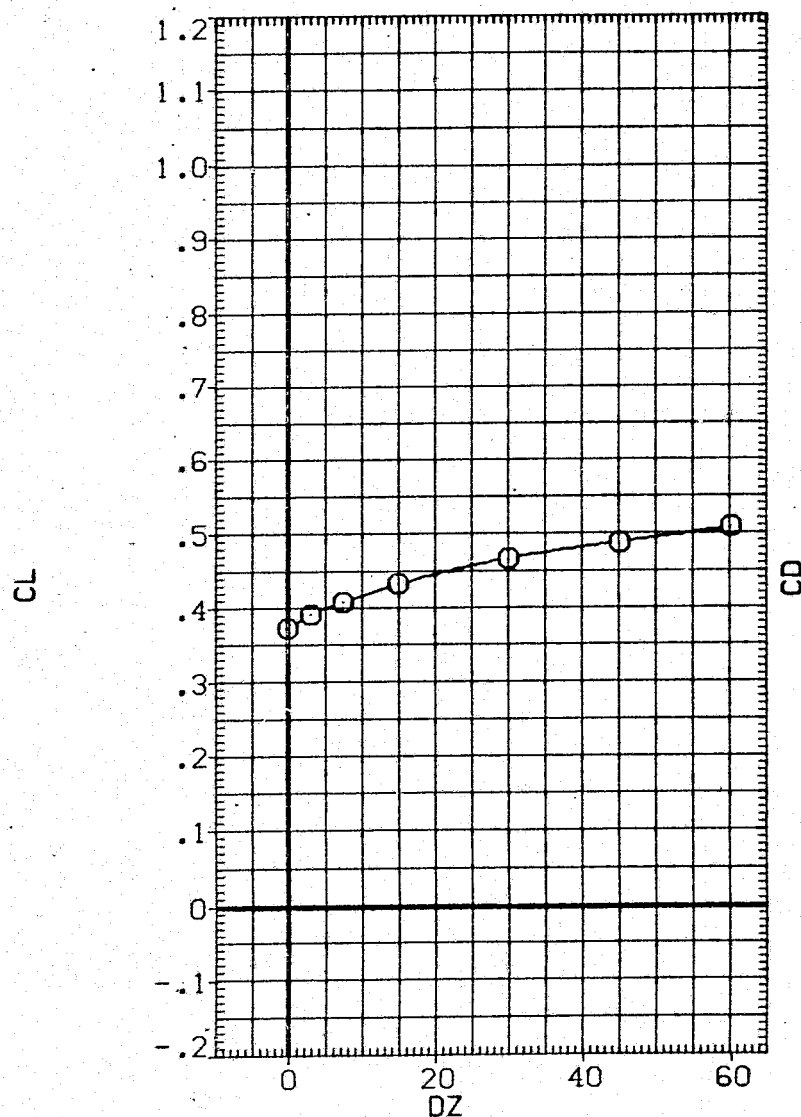


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN128)

SYMBOL	ALPHA0	ALPHAC	ELV-IB	ELEVON	BETA0	DY	PARAMETRIC VALUES	BETAC	ELV-OB	MACH	PHI	DX
○	10.000	4.000	.000	5.000	.000	.000	-5.000	3.000	.600	.000	20.000	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

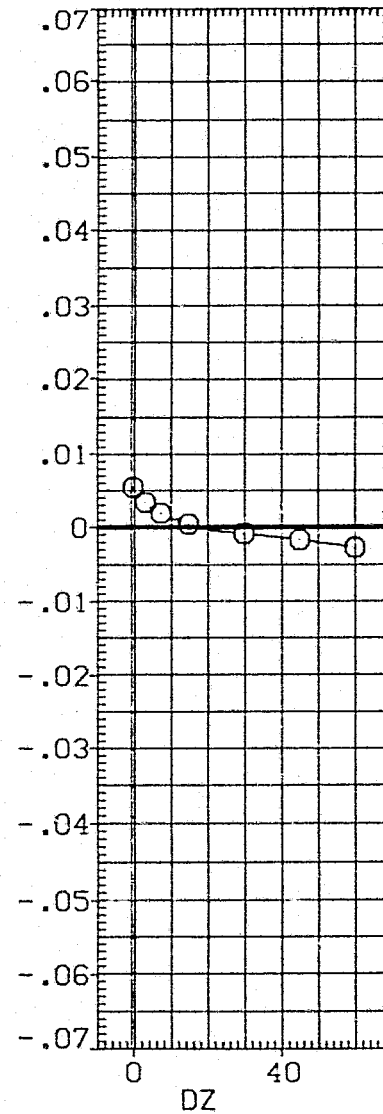
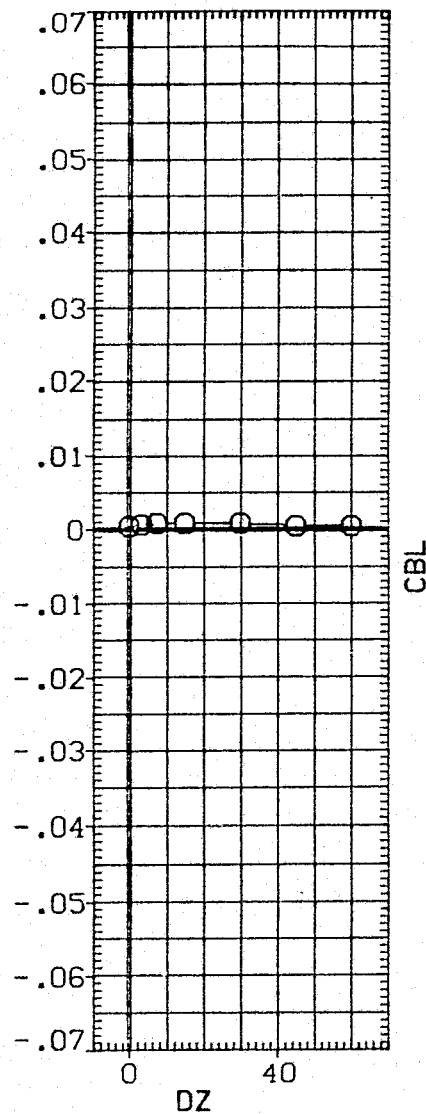
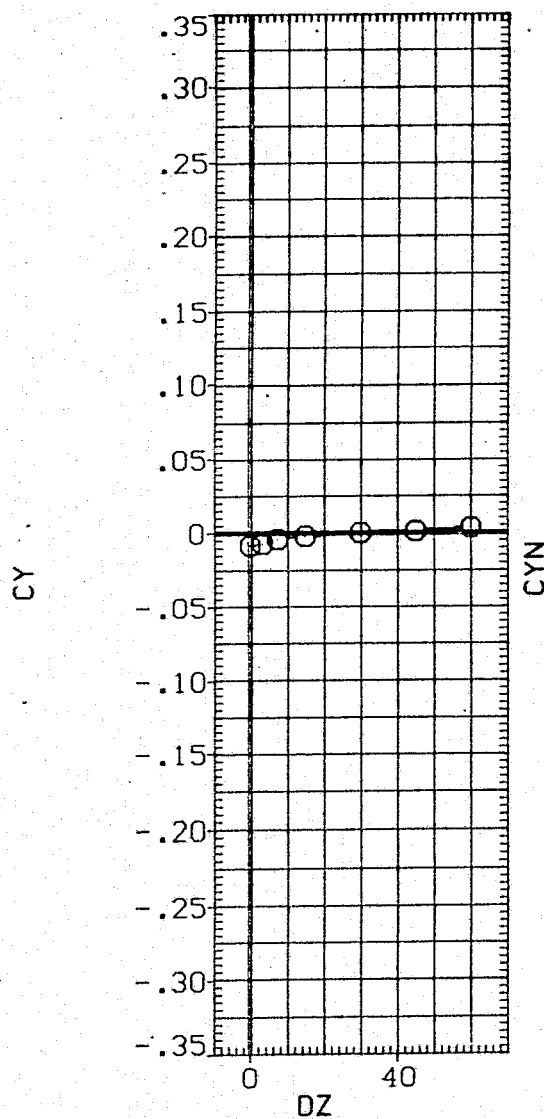


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S. (128 - 018) (VGN128)

SYMBOL

○

ALPHA0

10.000

PARAMETRIC VALUES

ALPHAC

4.000

BETAC

-5.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

20.000

DY

.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000

50.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

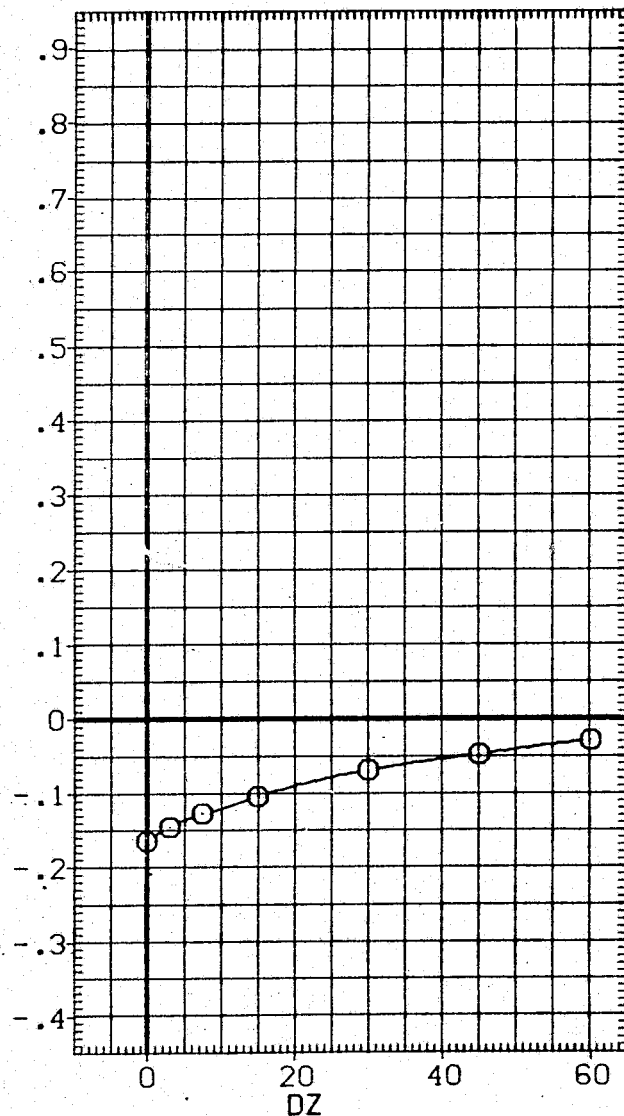
IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

DCN



DCLM

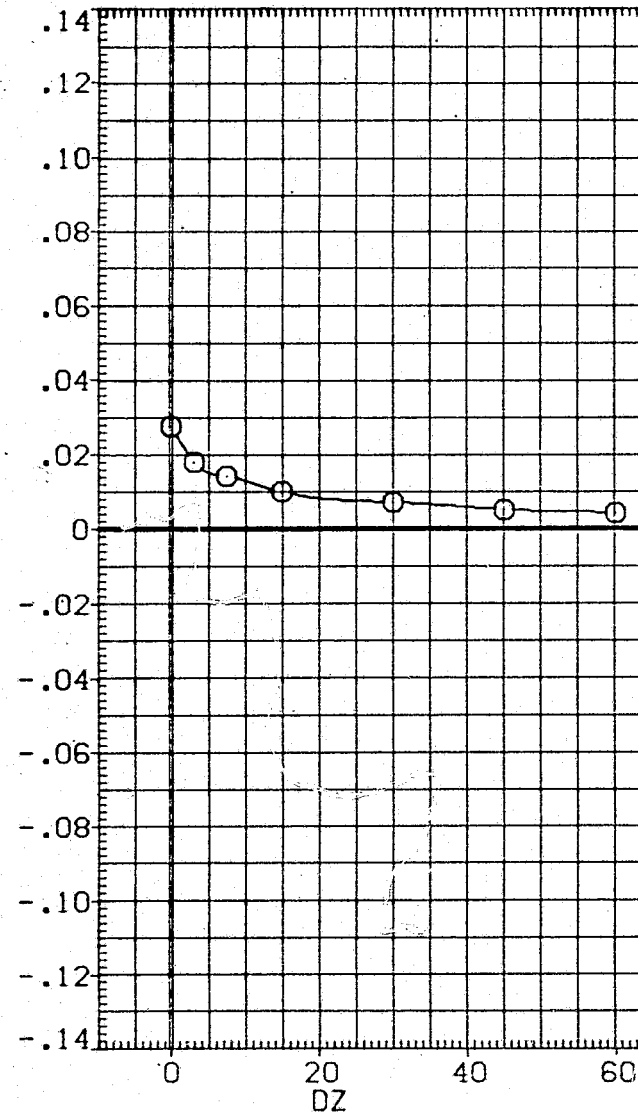


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION		
		ALPHAC	4.000	BETAC	-5.000	SREF	2690.0000	50.FT.
○	10.000	ELV-1B	.000	ELV-0B	3.000	LREF	474.8100	IN.
		ELEVON	5.000	MACH	.600	BREF	936.6800	IN.
		PHI	.000	DX	20.000	XMRP	1109.0000	IN.X0
		DY	.000	BETA0	.000	YMRP	.0000	IN.Y0
						ZMRP	375.0000	IN.Z0
						SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

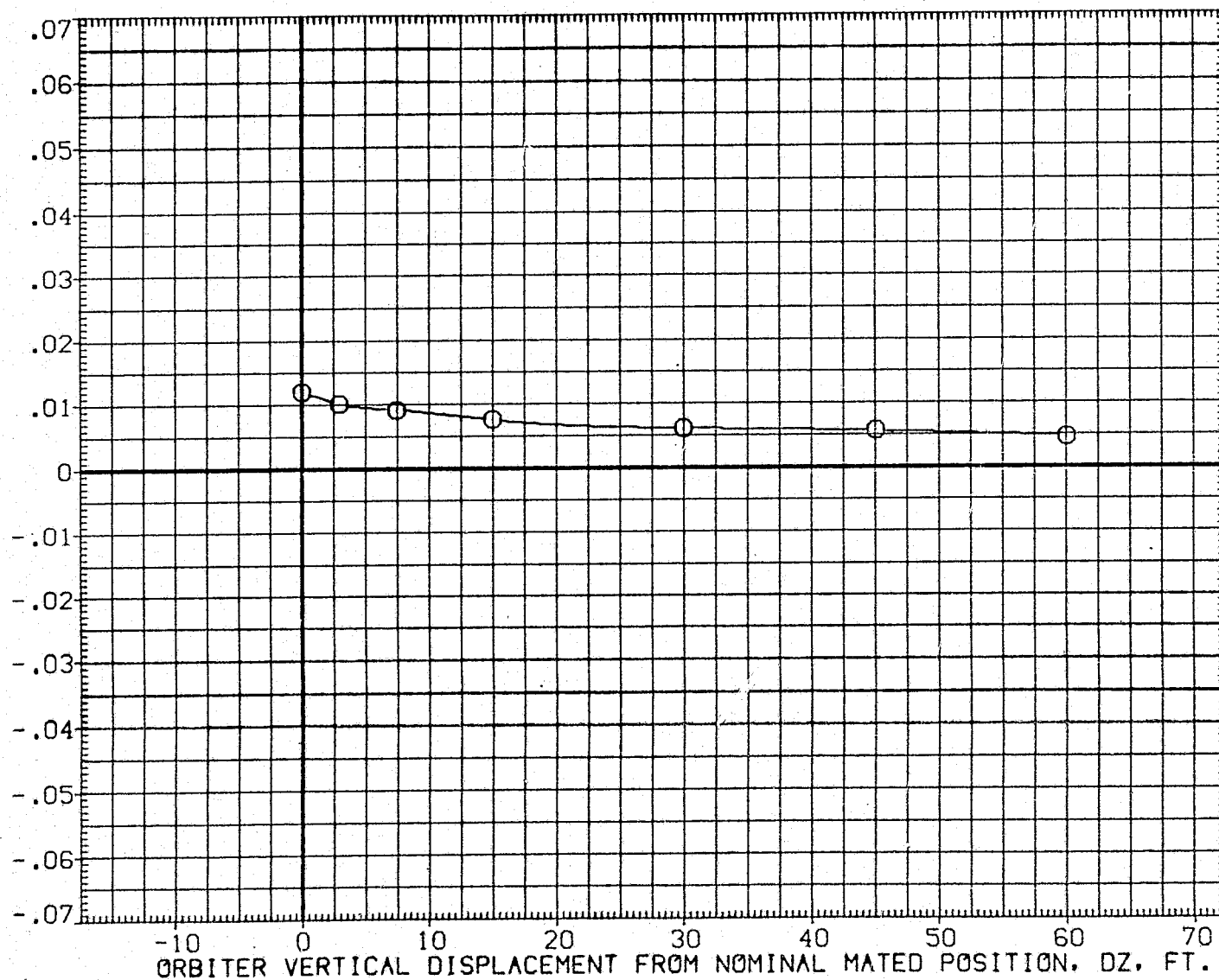


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (128 - 018) (VGN128)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

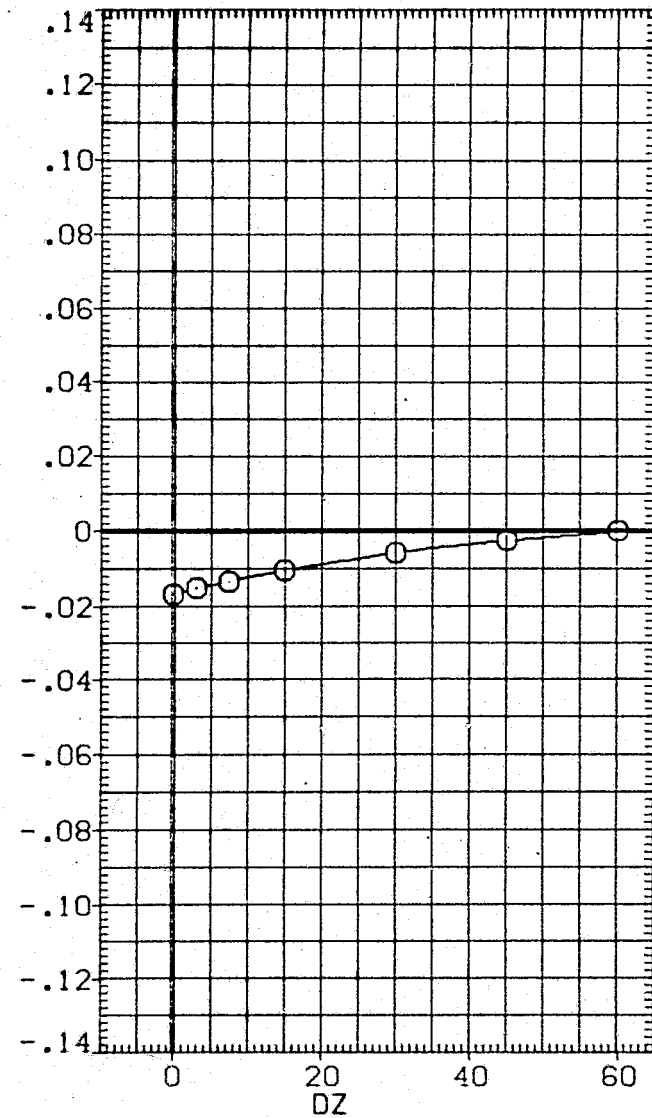
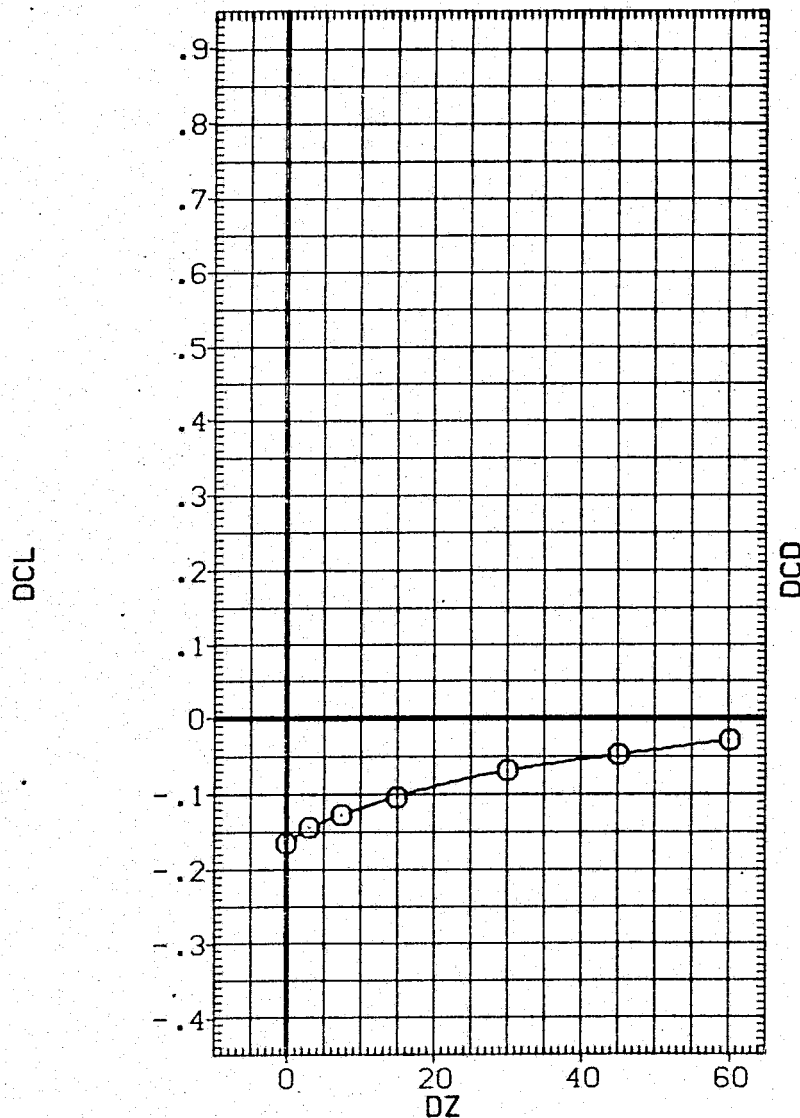


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.8800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

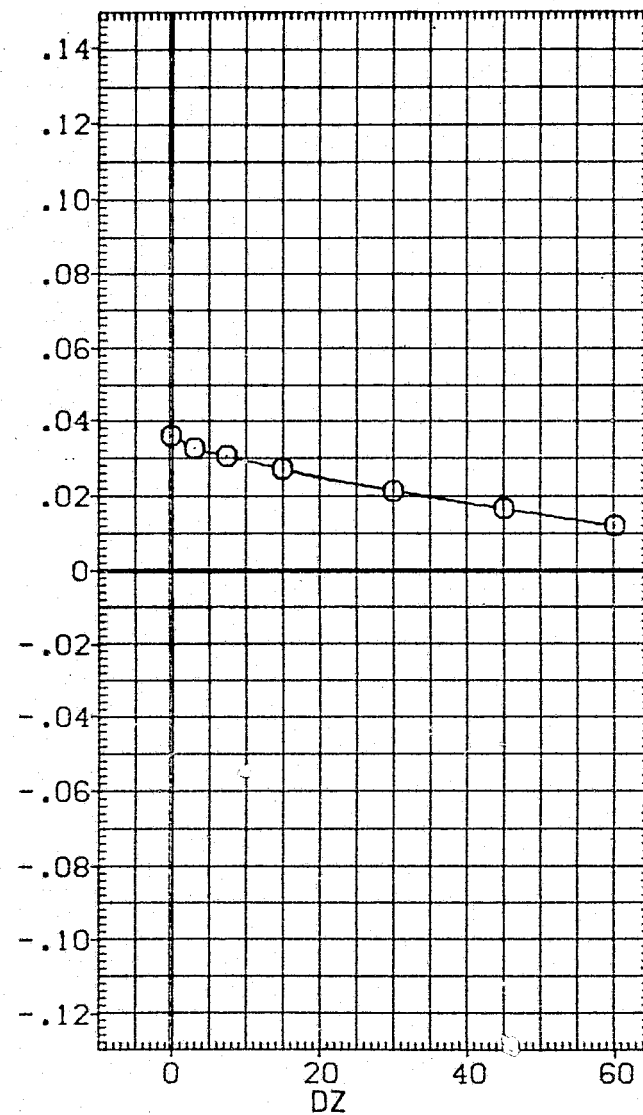
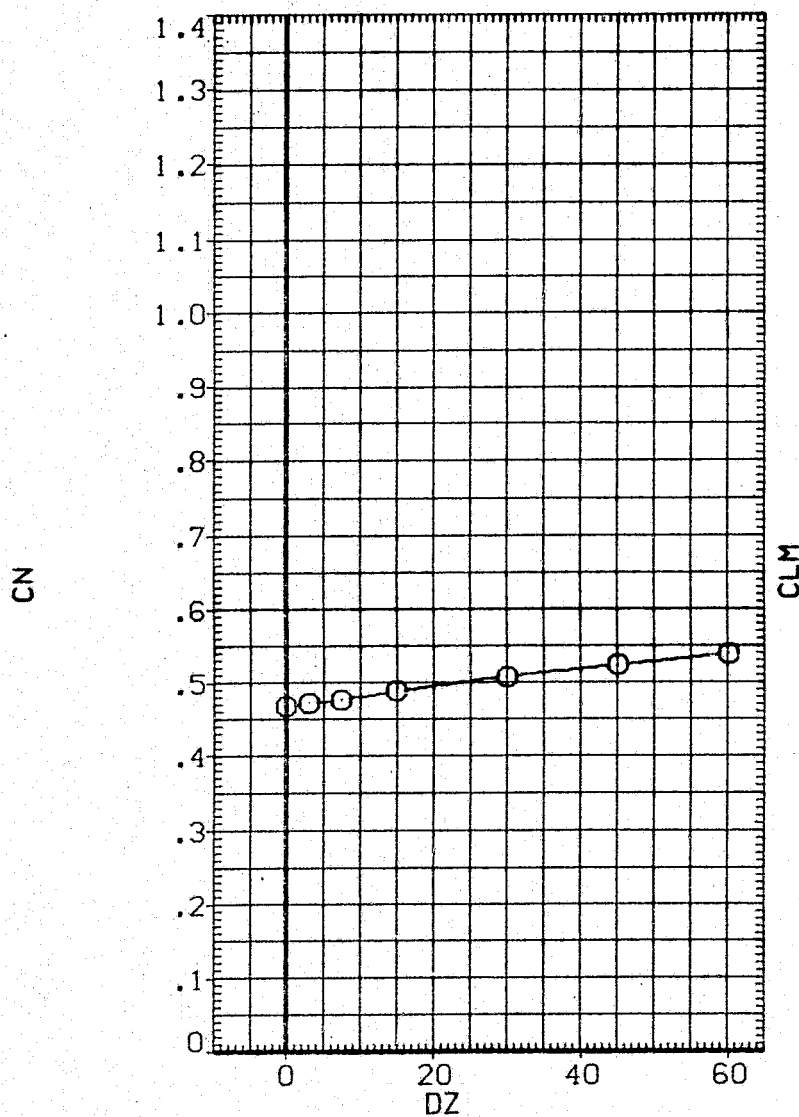


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN135)

SYMBOL		PARAMETRIC VALUES				
○	ALPHA0	10.000	ALPHAC	4.000	BETAC	-5.000
			ELV-1B	.000	ELV-0B	3.000
			ELEVON	5.000	MACH	.600
			BETA0	.000	PHI	.000
			DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

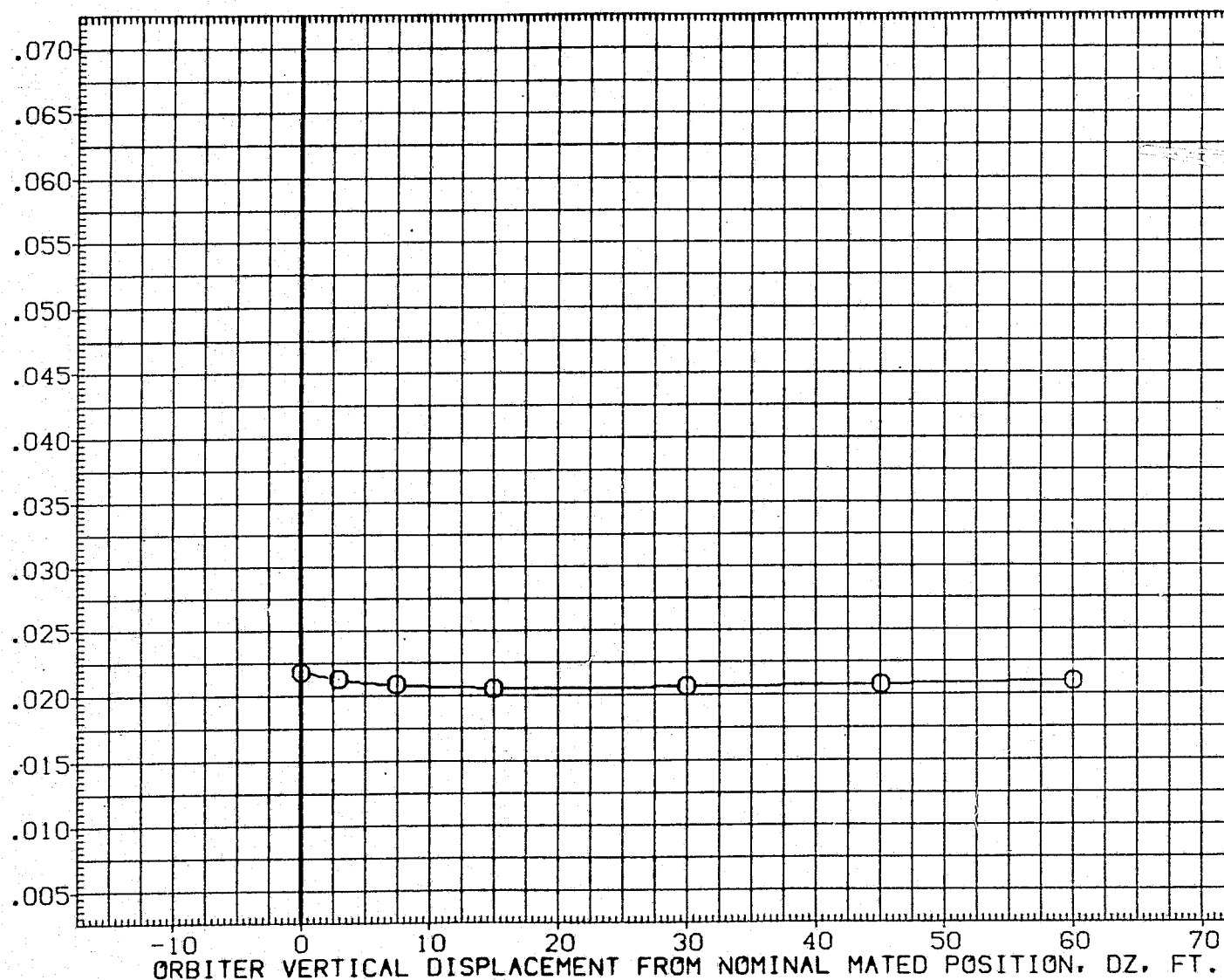


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN135)

SYMBOL

○

ALPHA0

10.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

-5.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

BETA0

.000

PHI

.000

DY

10.000

DX

.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

CL

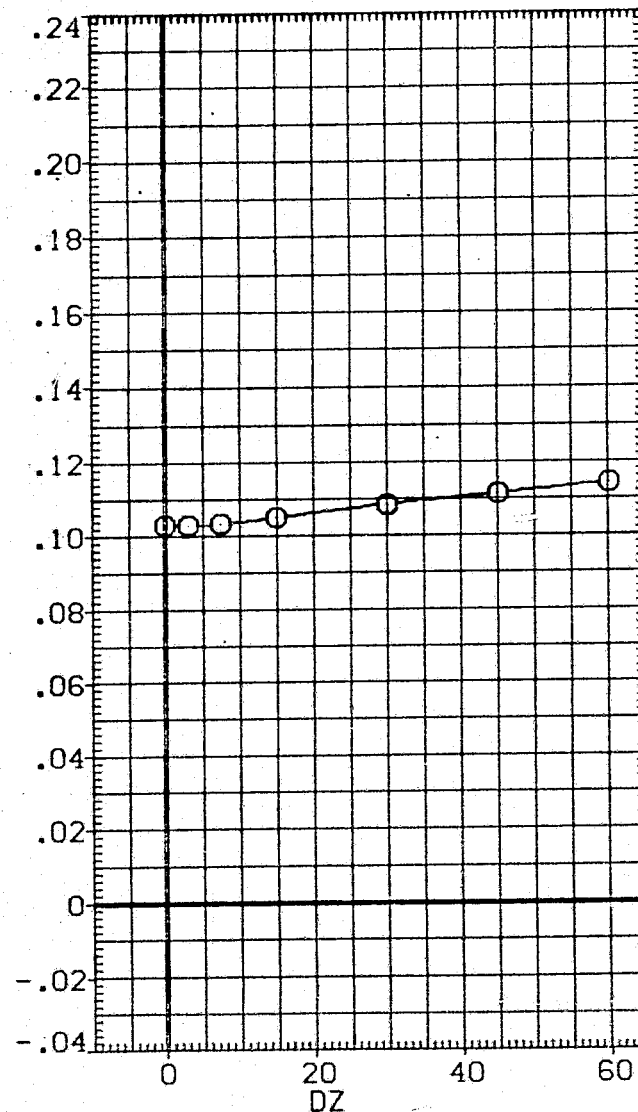
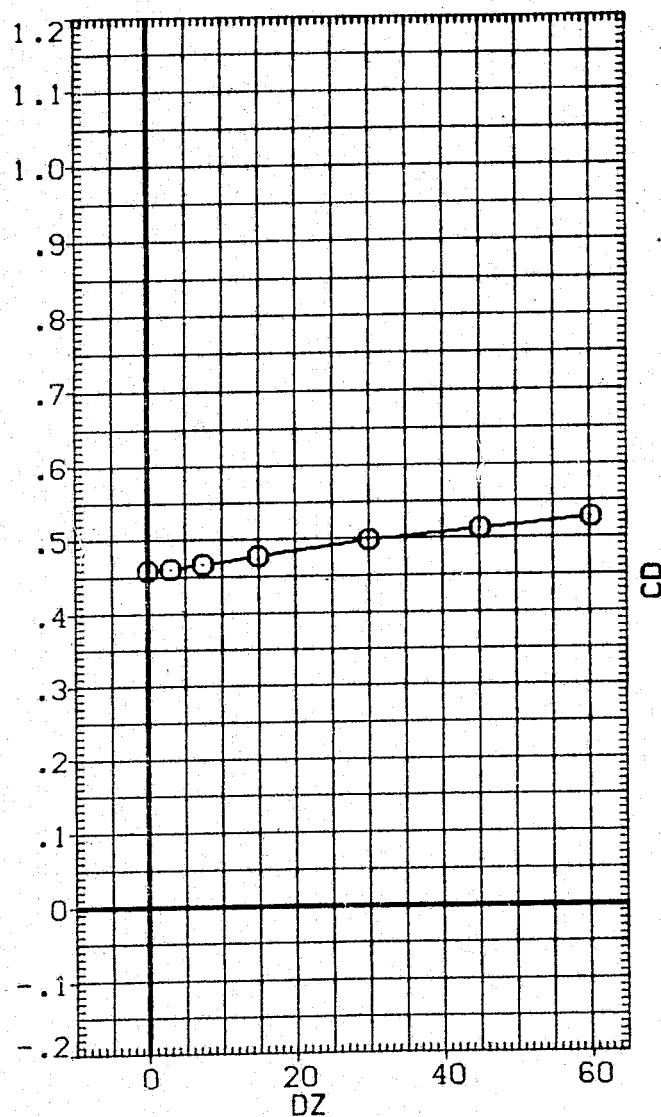


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA(NGN135)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

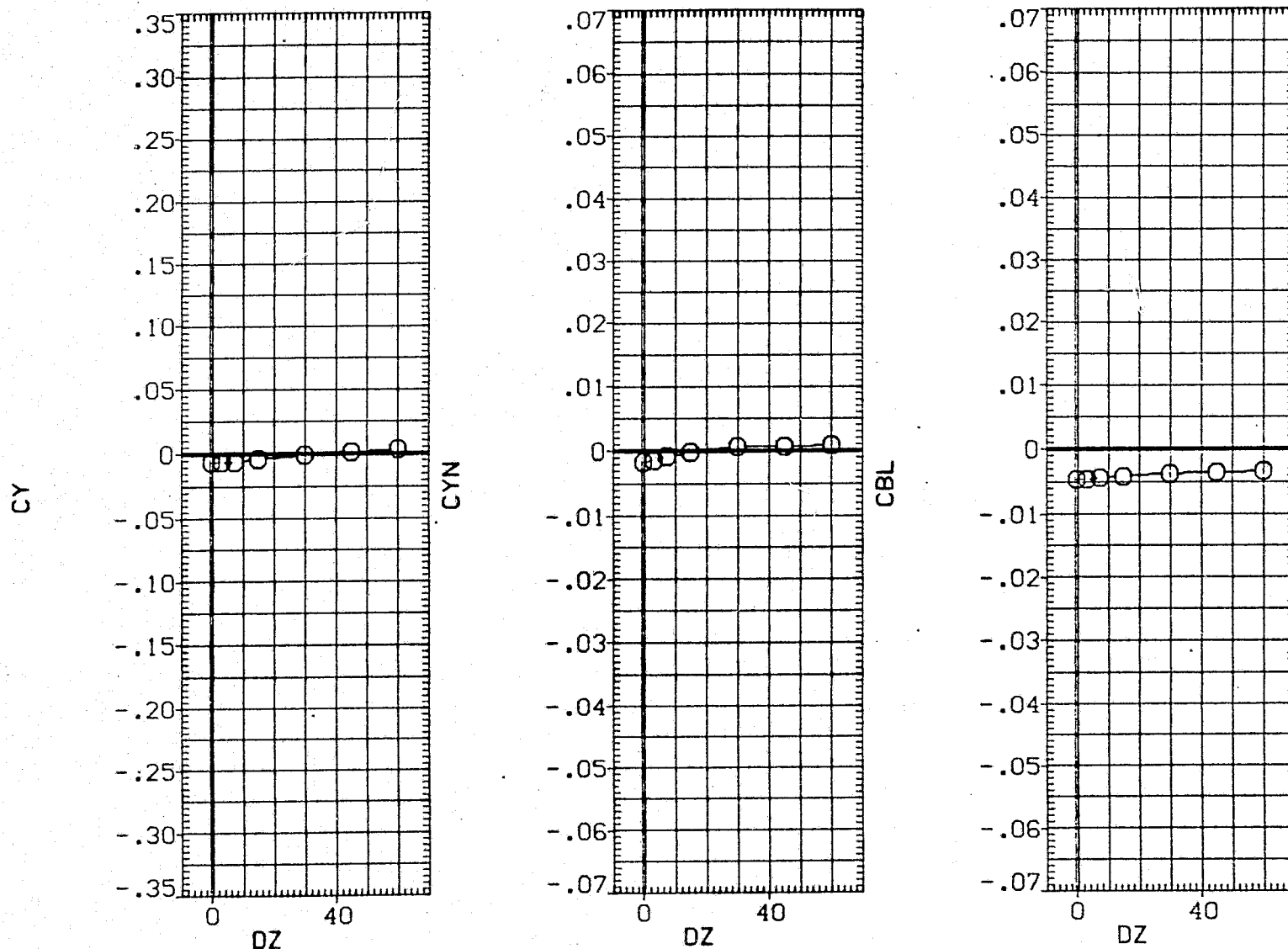


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02. AT PHI = 0)

SYMBOL

○

ALPHA0

10.000

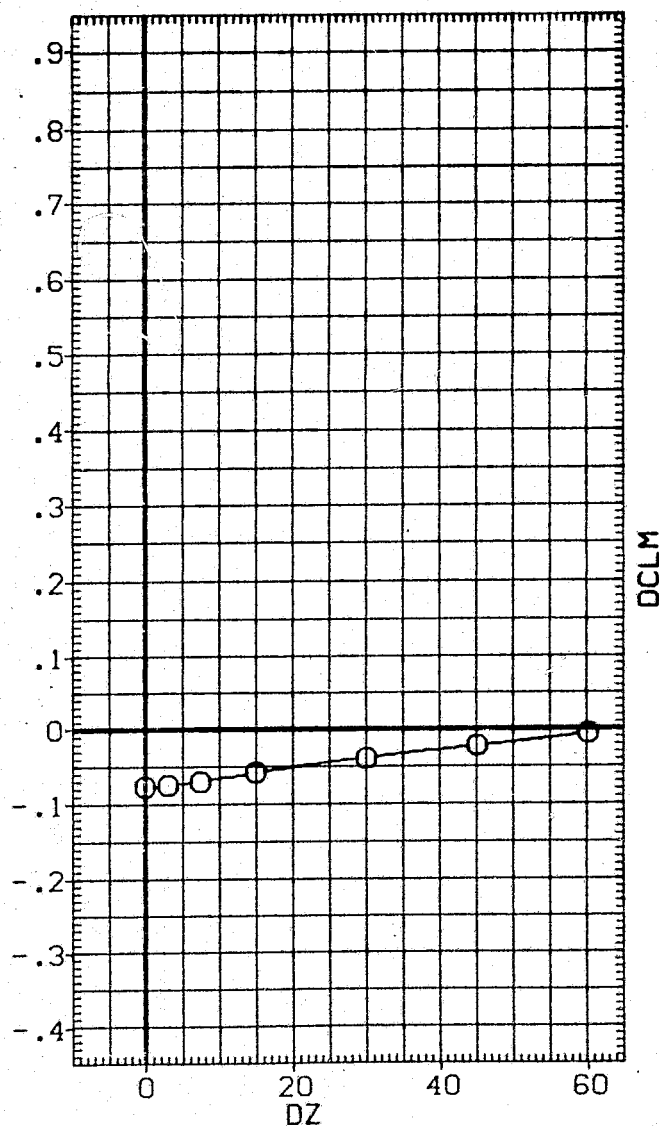
PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

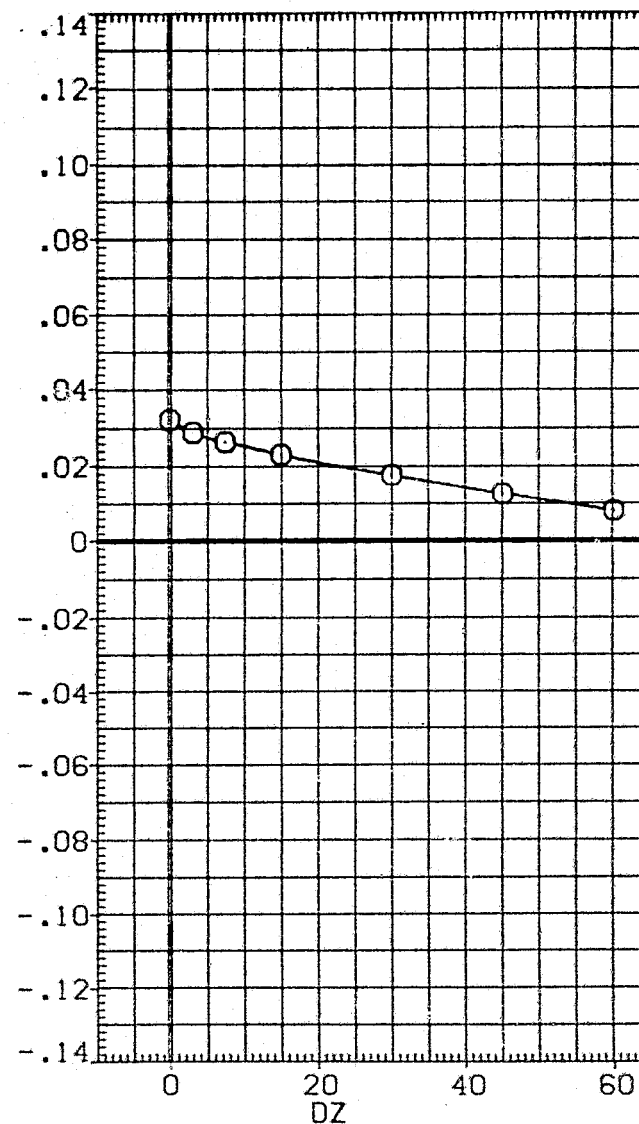


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (135 - 018)(VGN135)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	10.000	ALPHAC	4.000	BETAC	-5.000	SREF	2690.0000	SQ.FT.
		ELV-1B	.000	ELV-0B	3.000	LREF	474.8100	IN.
		ELEVON	5.000	MACH	.600	BREF	936.6800	IN.
		PHI	.000	DX	.000	XMRP	1109.0000	IN.X0
		DY	10.000	BETA0	.000	YMRP	.0000	IN.Y0
						ZMRP	375.0000	IN.Z0
						SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

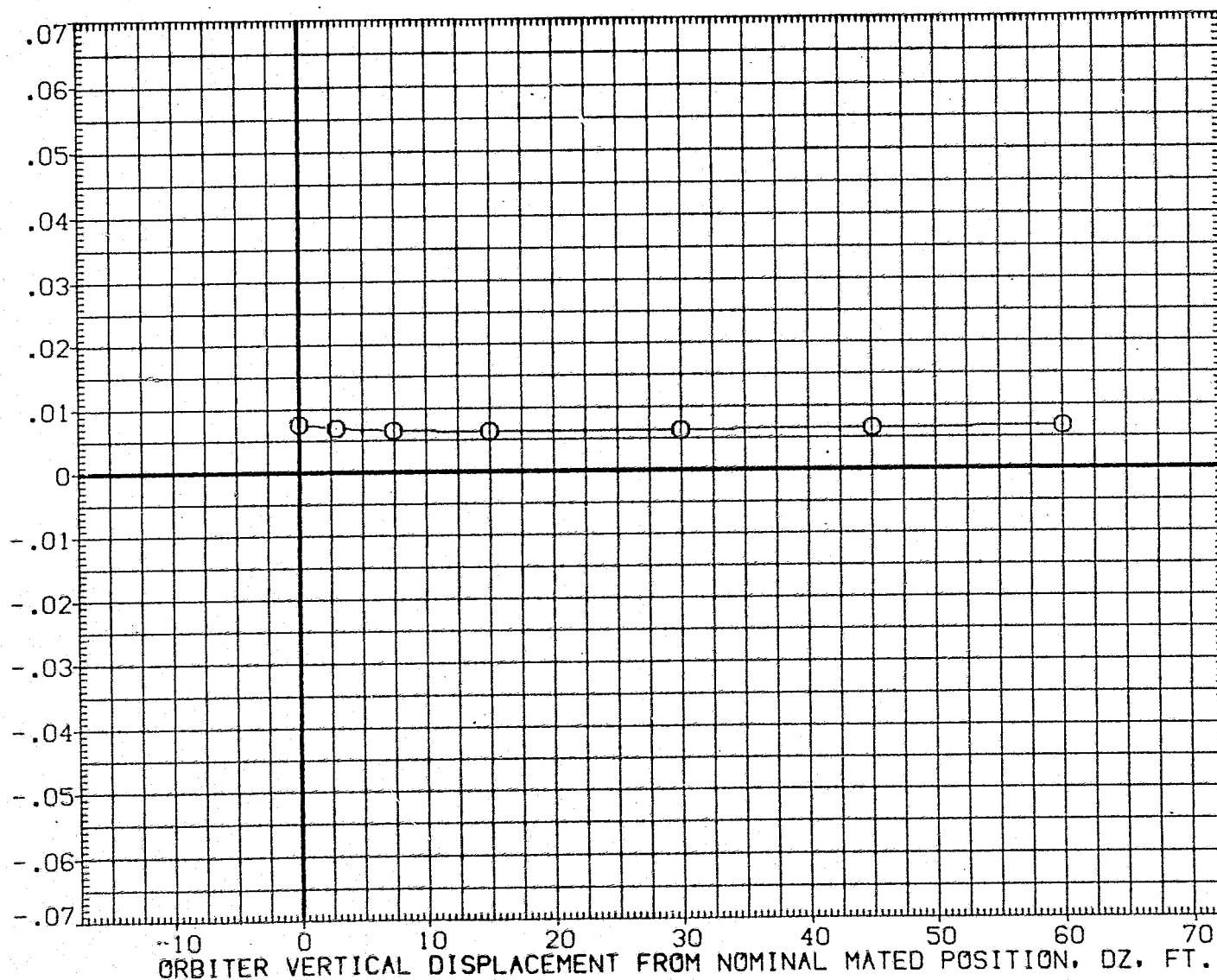


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (135 - 018) (VGN135)

SYMBOL
○ALPHA0
10.000ALPHAC
ELV-1B
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000	BETAC	-5.000
.000	ELV-0B	3.000
5.000	MACH	.600
.000	DX	.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

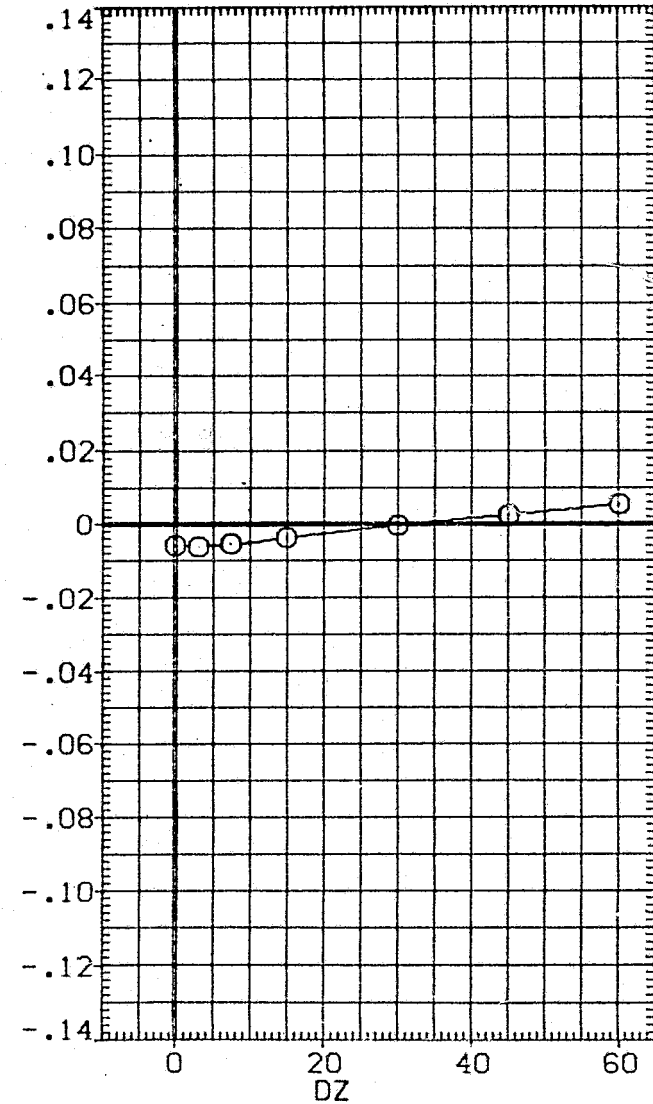
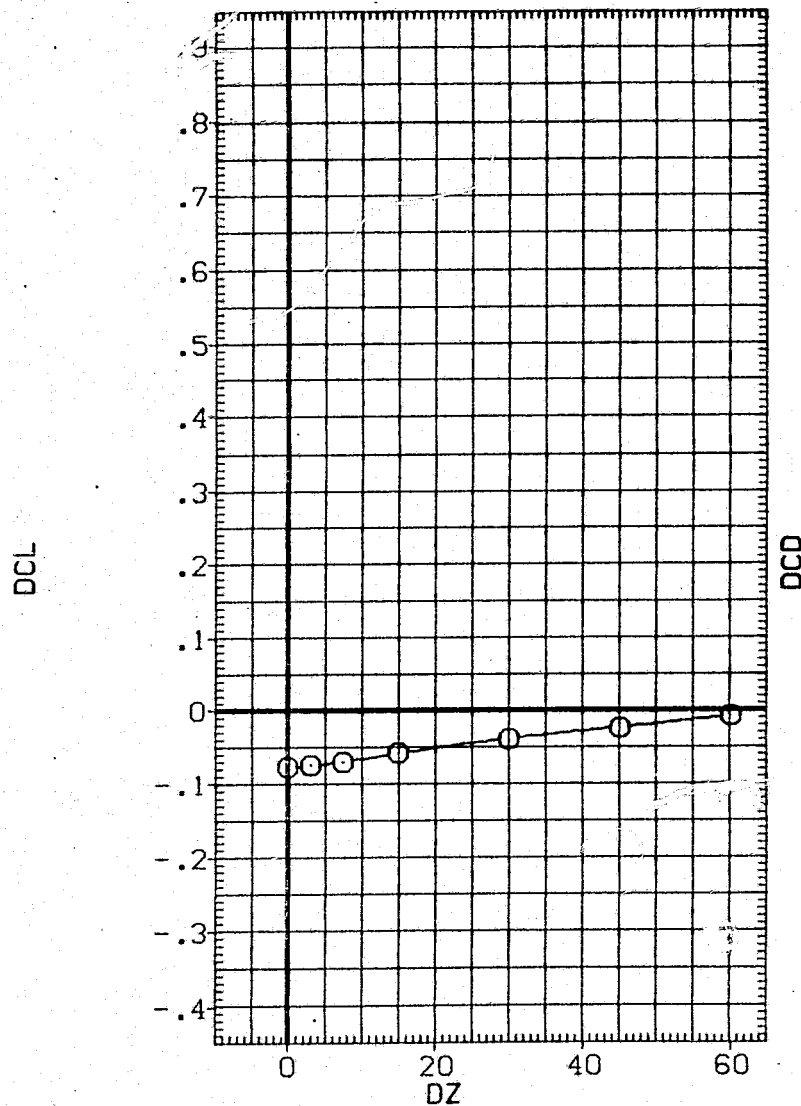


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN136)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

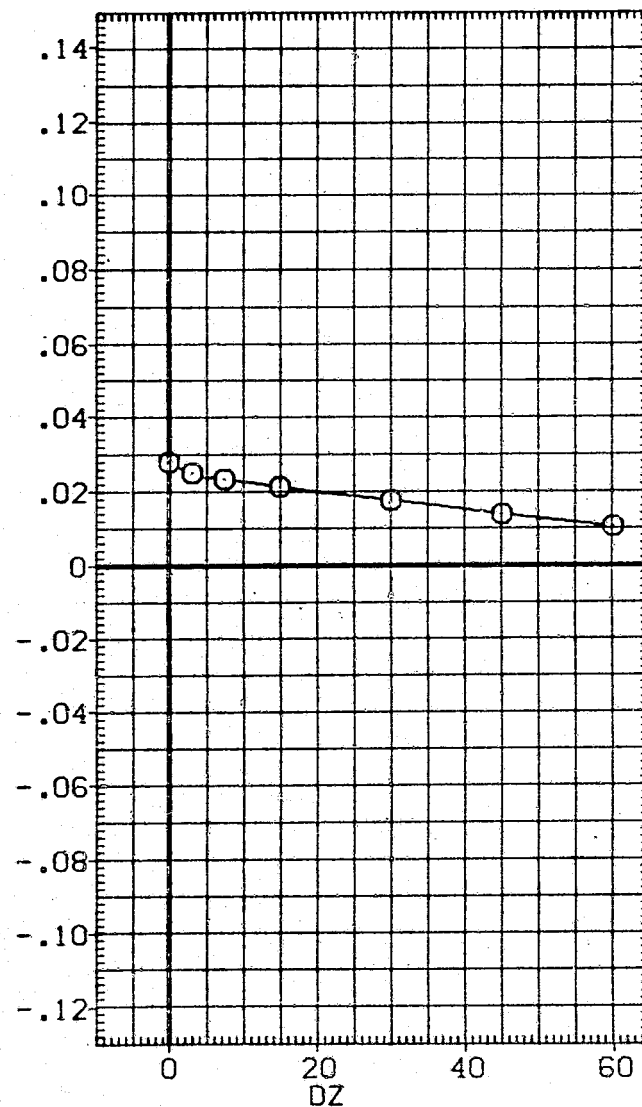
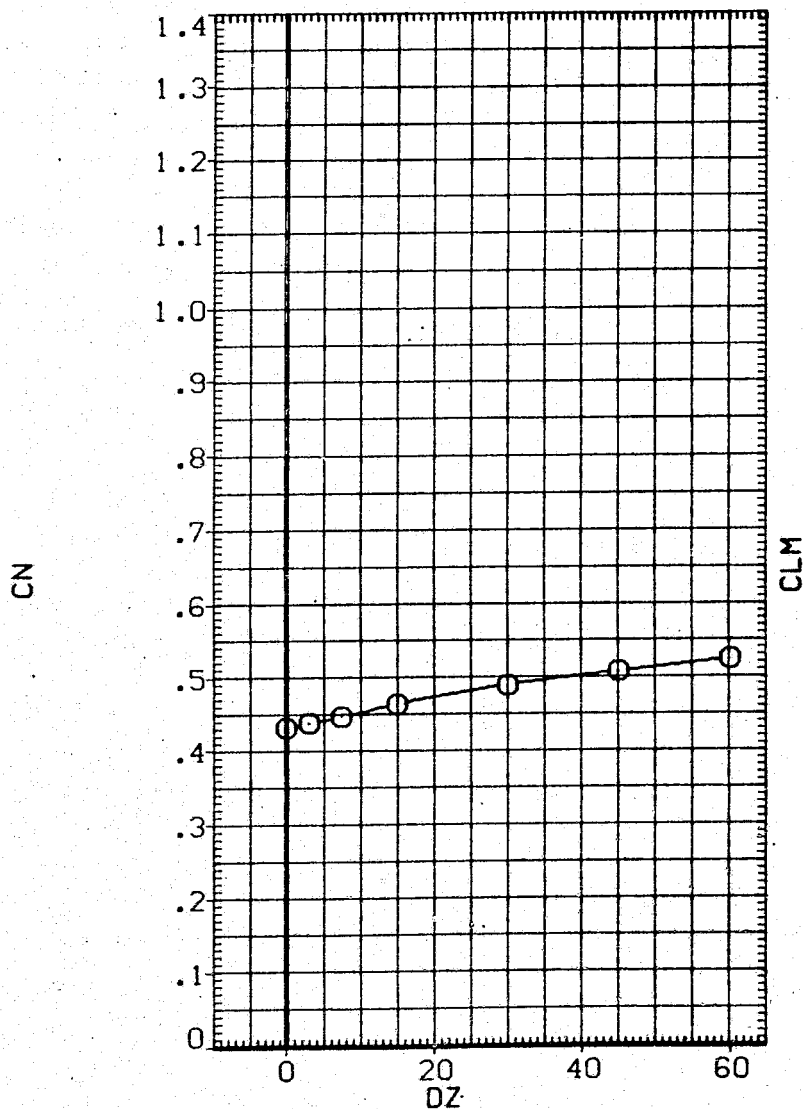


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
Q	10.000	ALPHAC 4.000 BETAC -5.000
		ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		BETA0 .000 PHI .000
	DY 10.000	DX 10.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

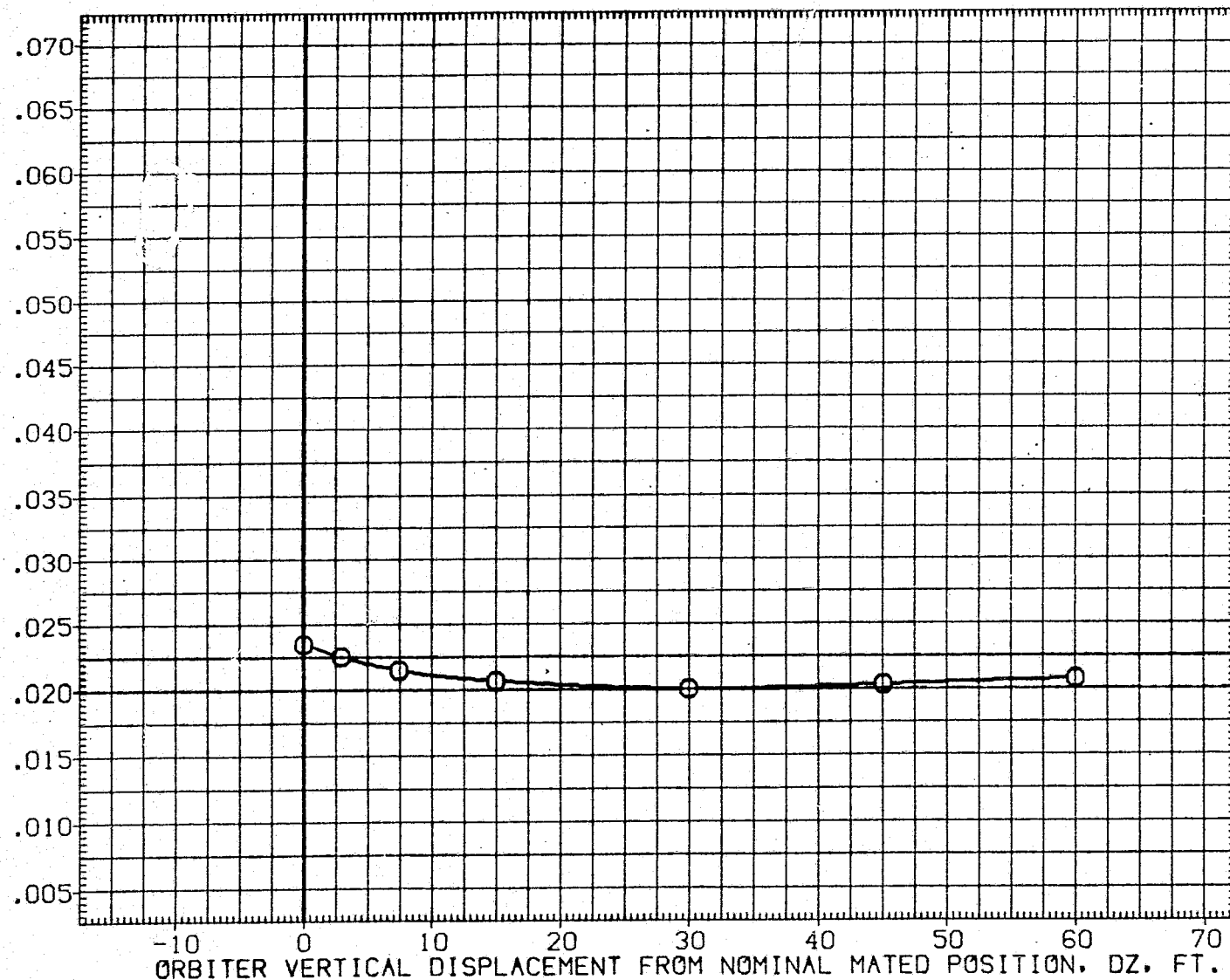


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN136)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

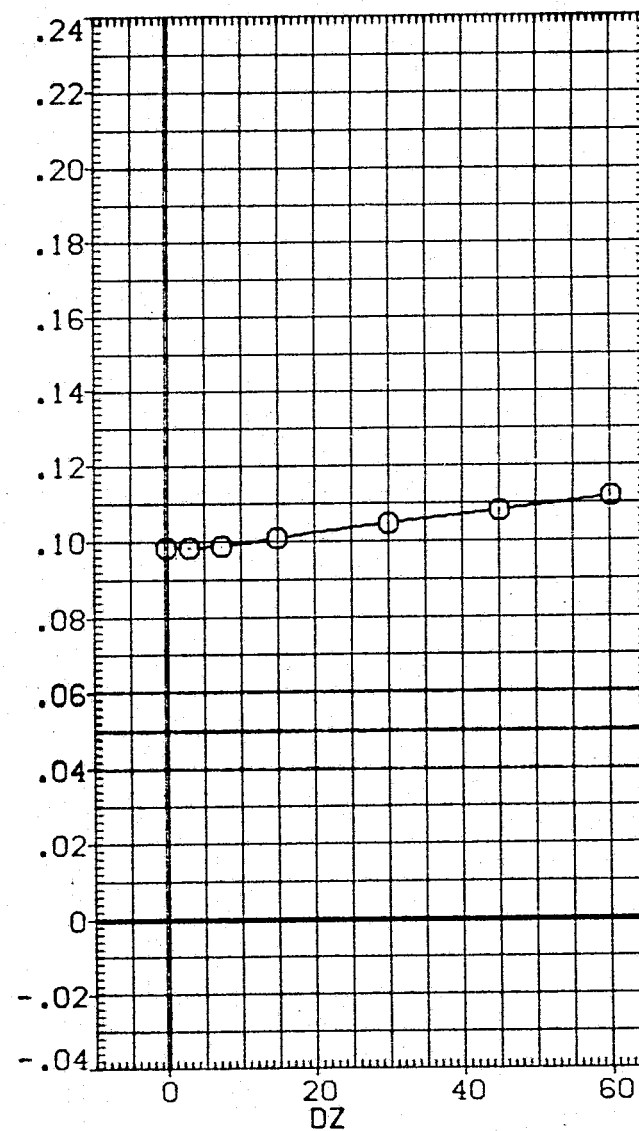
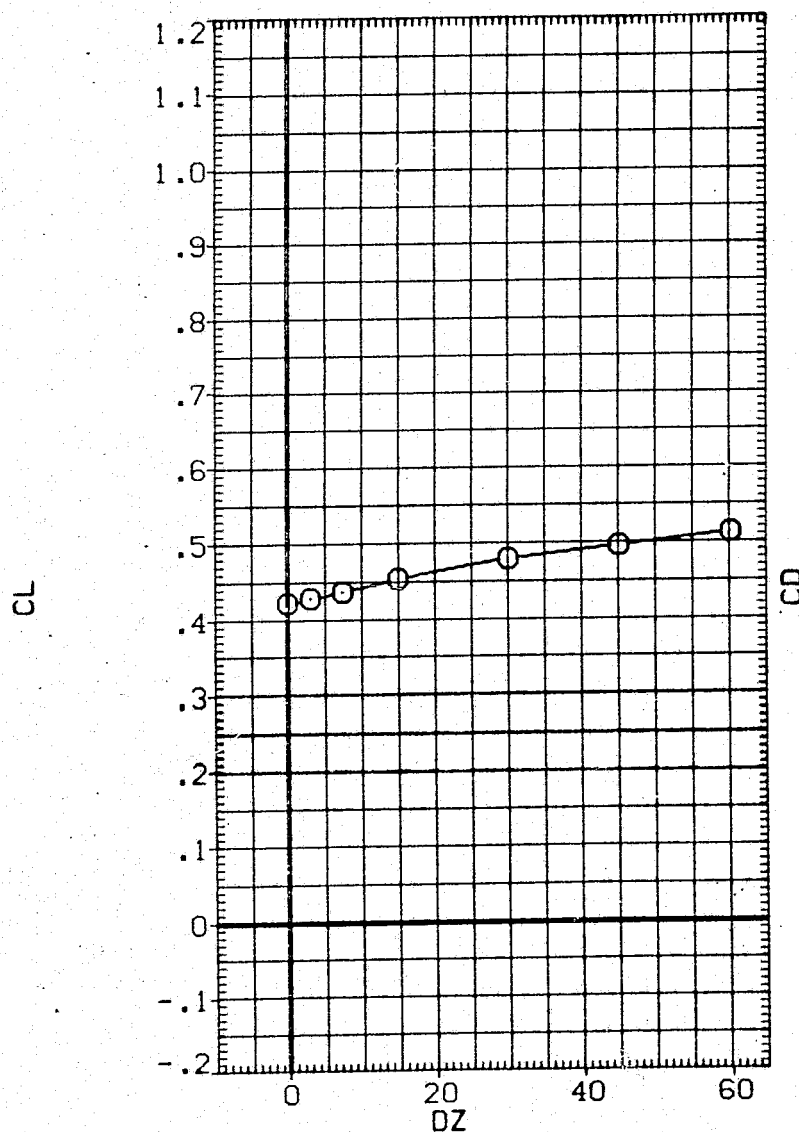


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	ALPHAC	PARAMETRIC VALUES	BETAC
○	10.000	ELV-1B	.000	ELV-0B
		ELEVON	5.000	MACH
		BETA0	.000	PHI
		DY	10.000	DX
				10.000

REFERENCE INFORMATION	
SREF	2690.0000 SQ.FT.
LREF	474.8100 IN.
BREF	936.6800 IN.
XMRP	1109.0000 IN.X0
YMRP	.0000 IN.Y0
ZMRP	375.0000 IN.Z0
SCALE	.0300

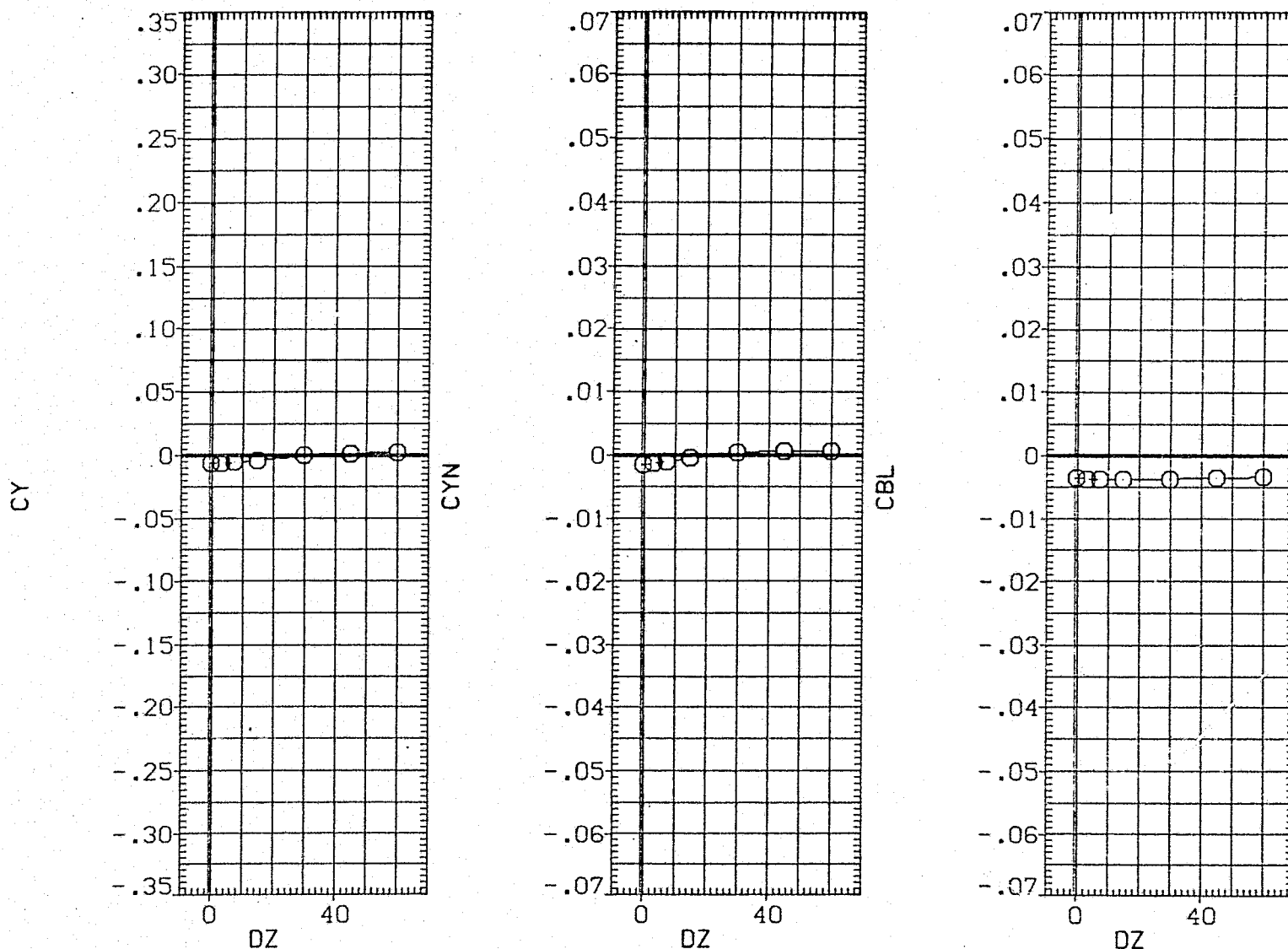


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (136 - 018)(VGN136)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

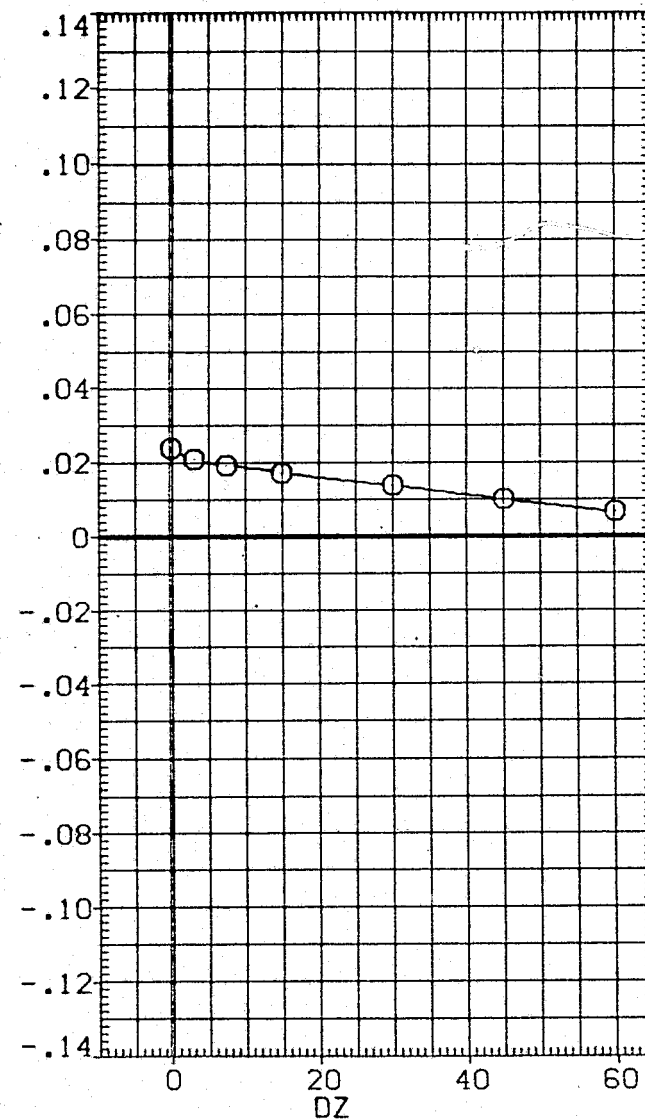
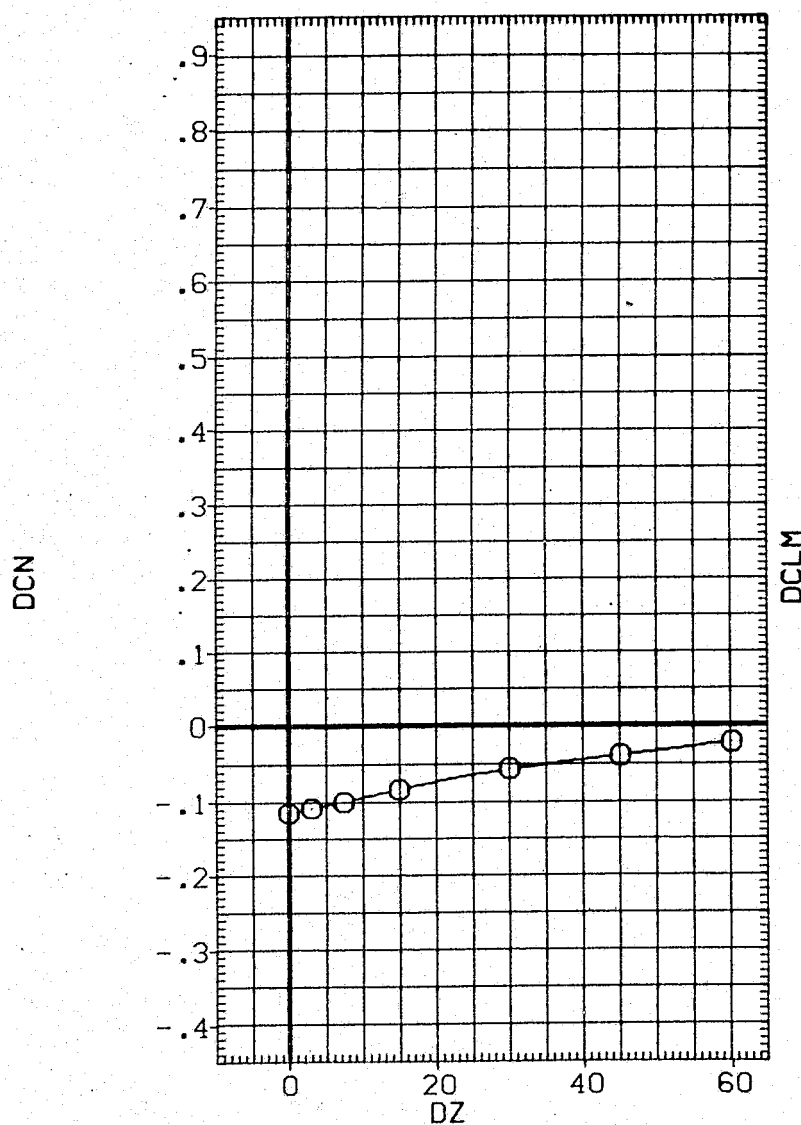


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	10.000	ALPHAC	4.000	BETAC	-5.000	SREF	2690.0000	50.FT.
		ELV-18	.000	ELV-08	3.000	LREF	474.8100	IN.
		ELEVON	5.000	MACH	.600	BREF	936.6800	IN.
		PHI	.000	DX	10.000	XMRP	1109.0000	IN.X0
		DY	10.000	BETA0	.000	YMRP	.0000	IN.Y0
						ZMRP	375.0000	IN.Z0
						SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

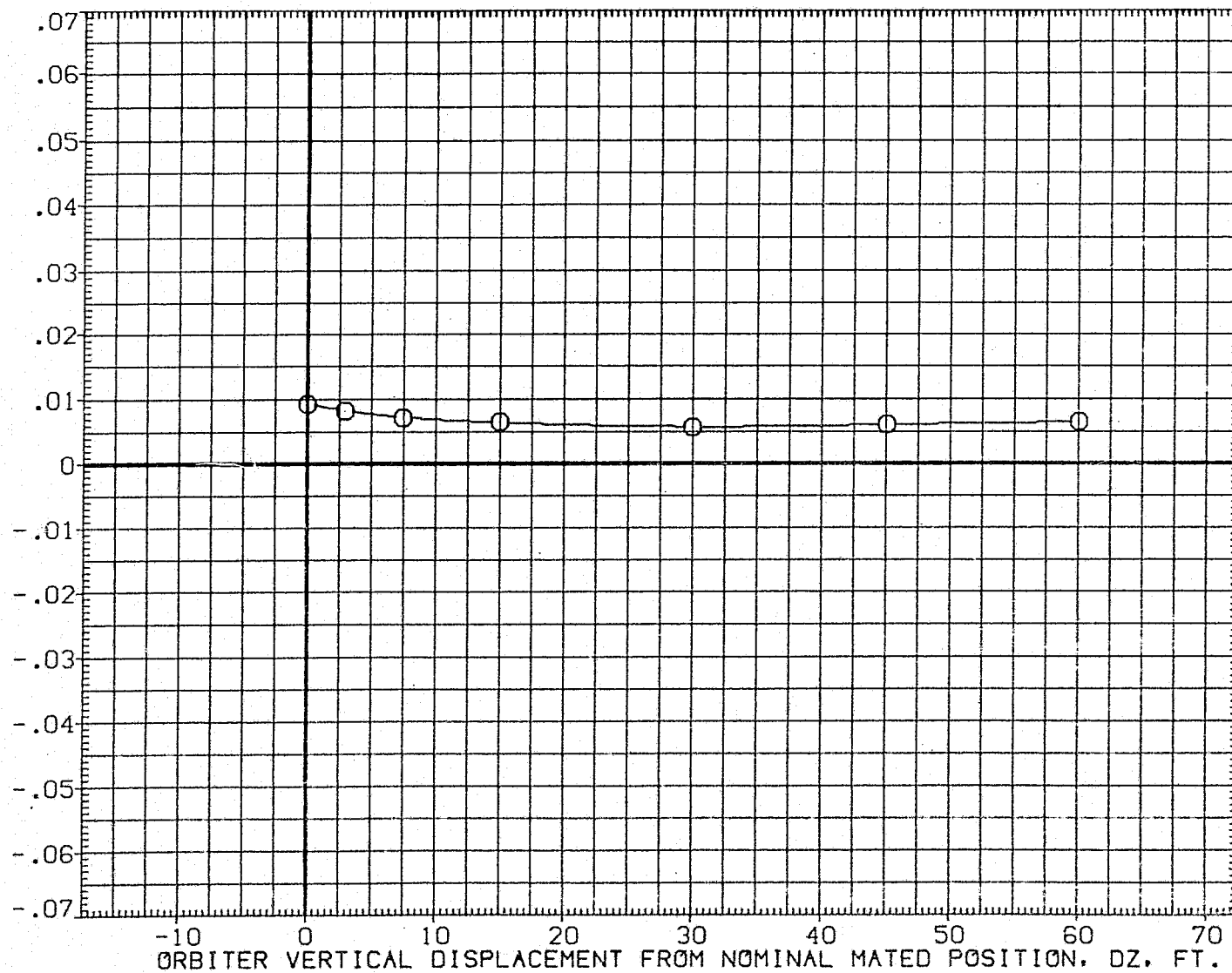


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (136 - 018) (VGN136)

SYMBOL
○ALPHA0
10.000

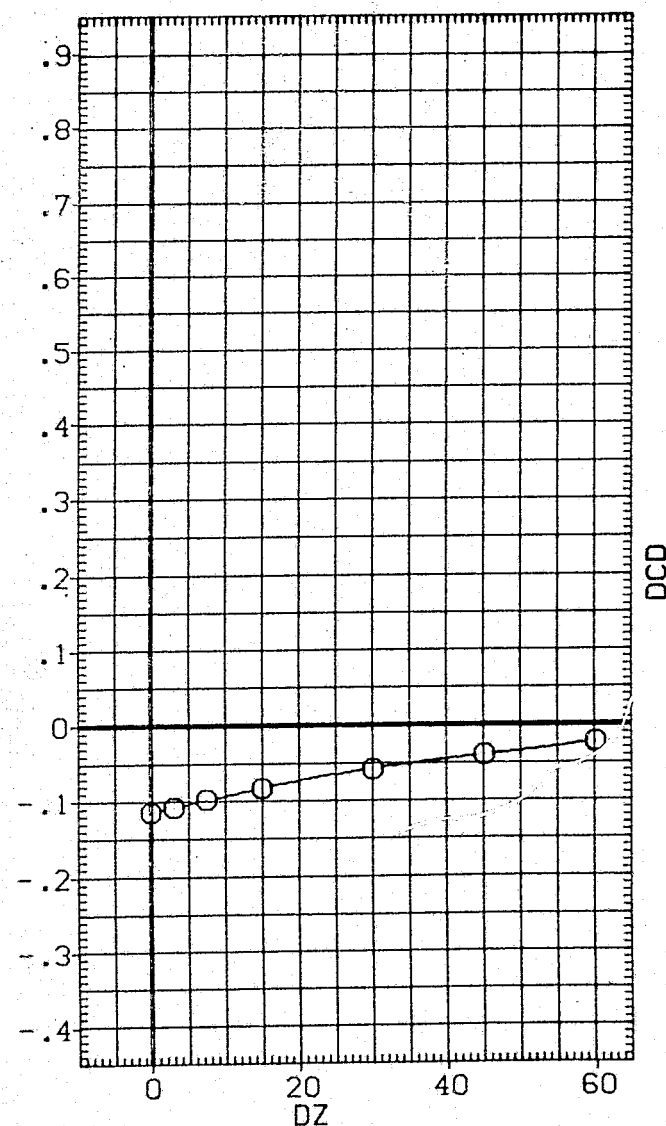
PARAMETRIC VALUES

ALPHAC	4.000	BETAC	-5.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL



DCD

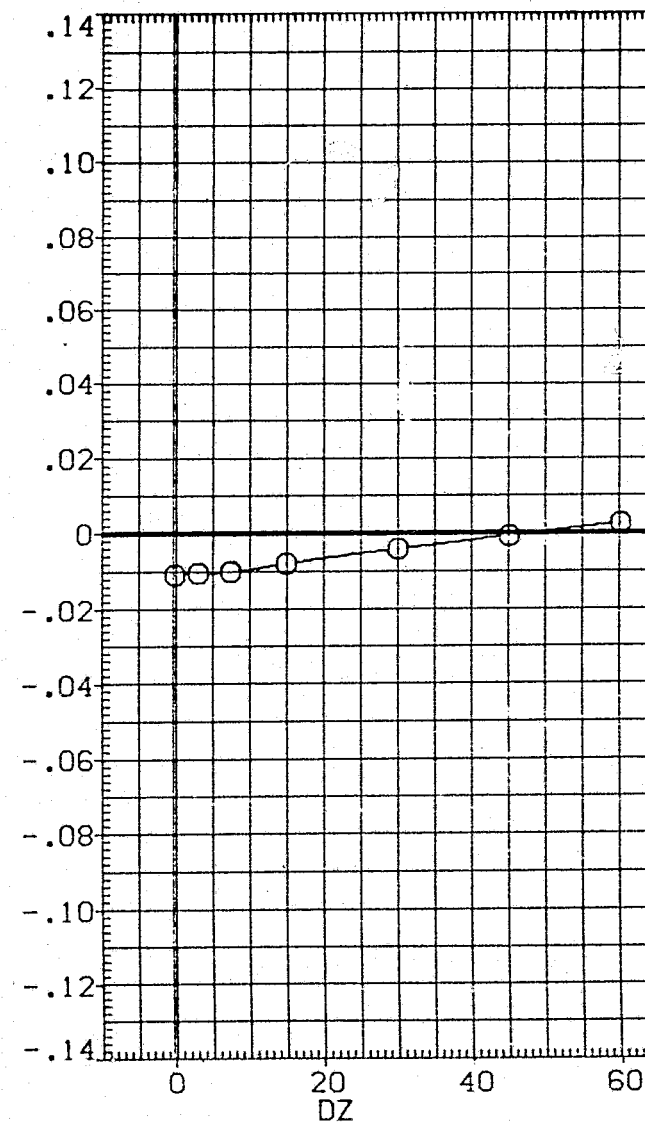


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES		
○	10.000		.000	ELV-IB	.000
□	14.000	ELV-OB	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

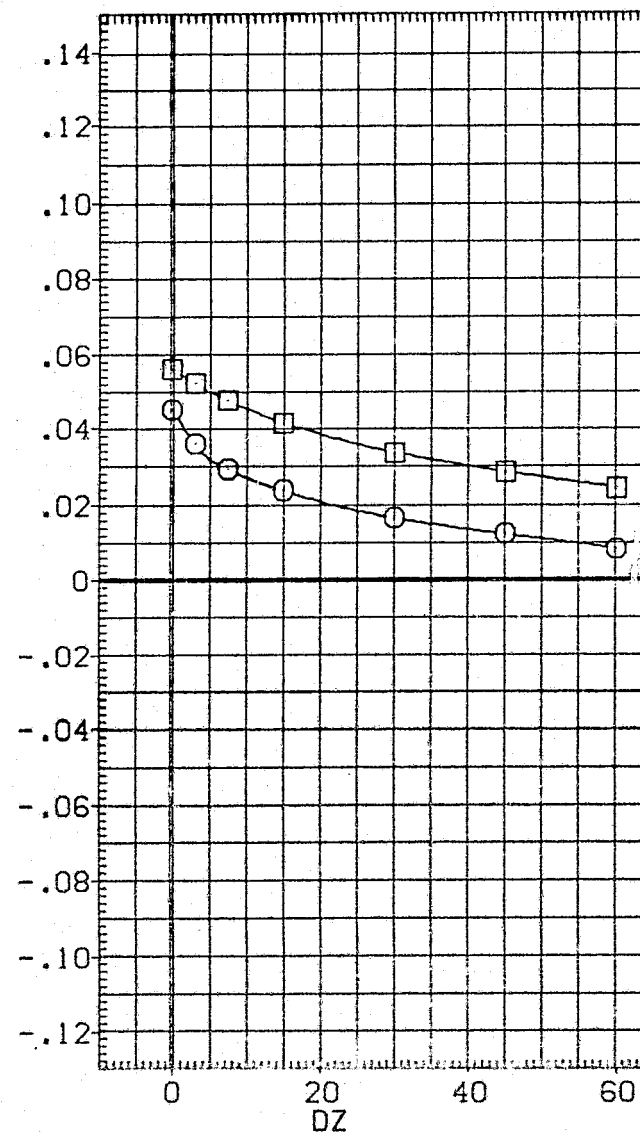
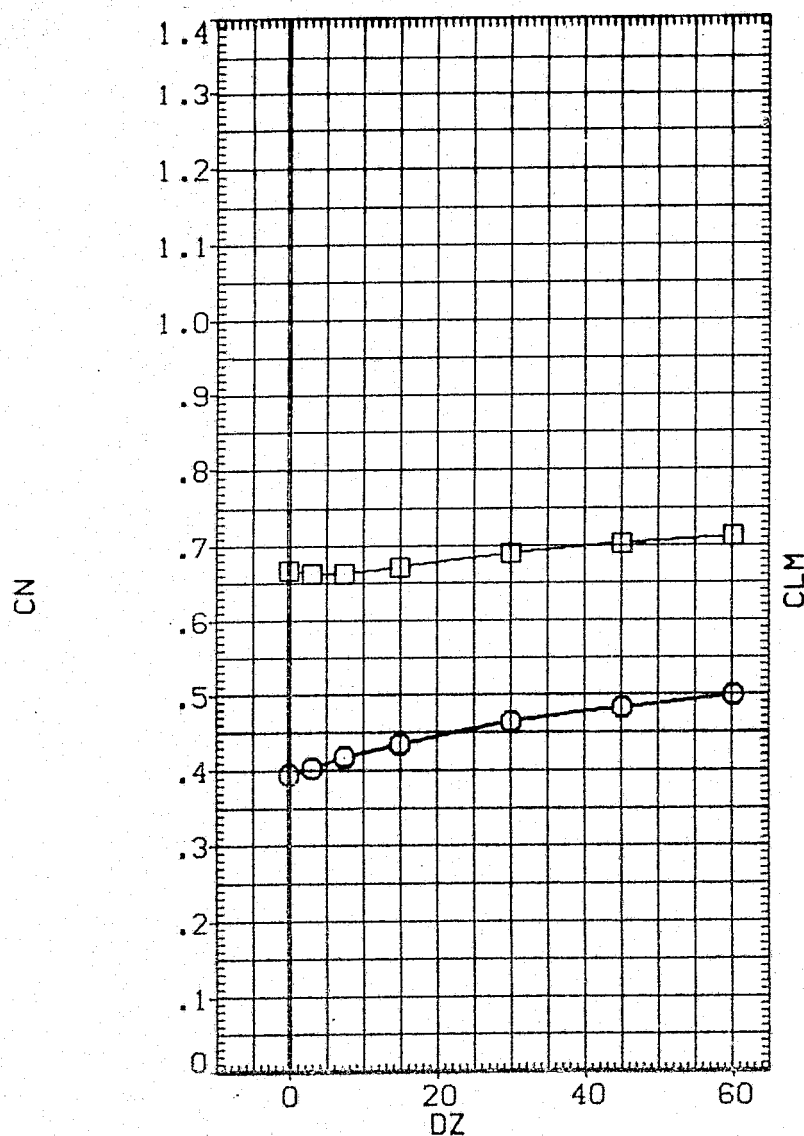


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN129)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	BETAC	.000	ELV-18	.000	
○	14.000	ELV-08	3.000	ELEVON	5.000	
□		MACH	.600	BETA0	.000	
		PHI	.000	DY	.000	
		DX	.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

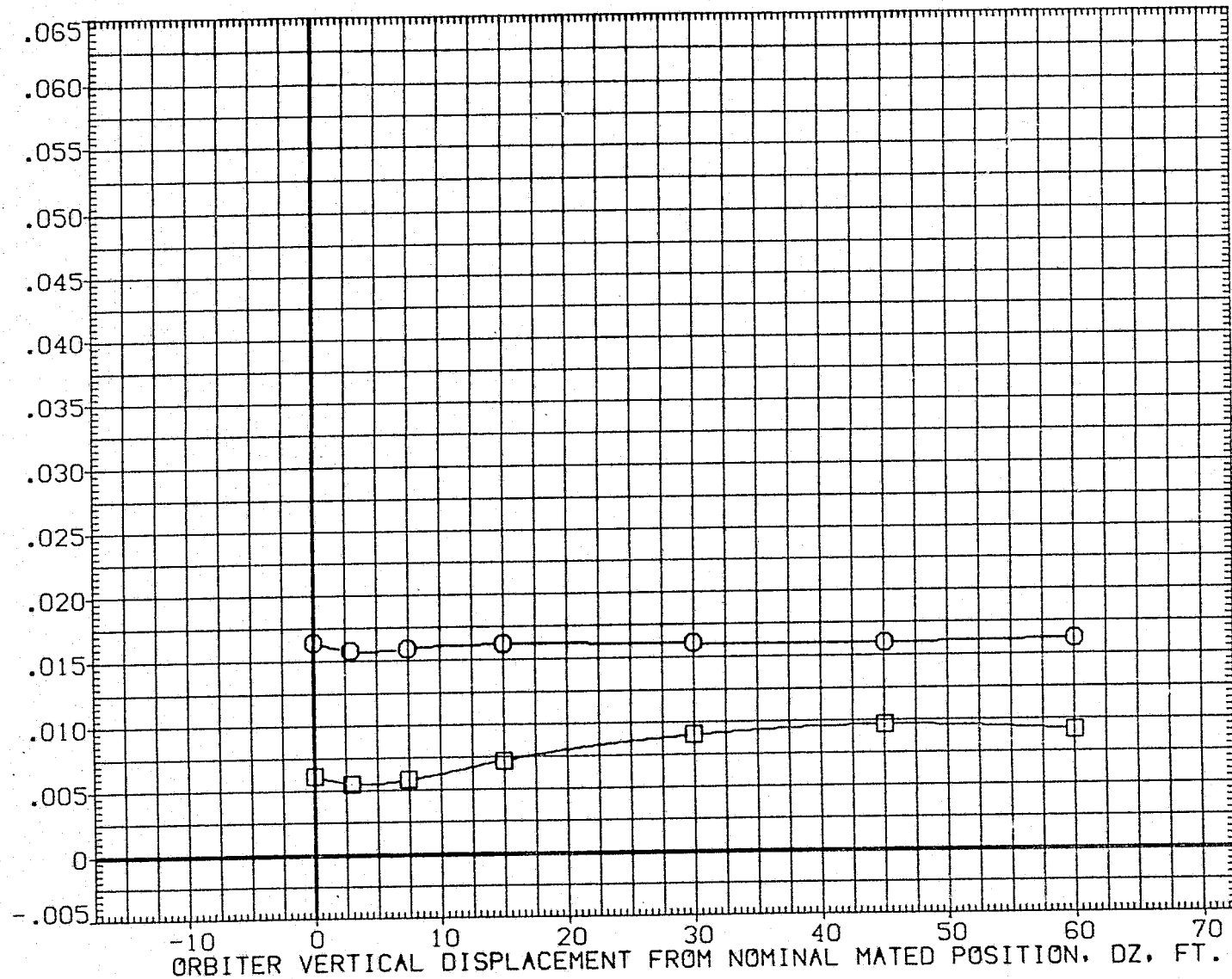


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN129)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	10.000	.000	ELV-IB	.000
□	14.000	3.000	ELEVON	5.000
		.600	BETAD	.000
		.000	DY	.000
		.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

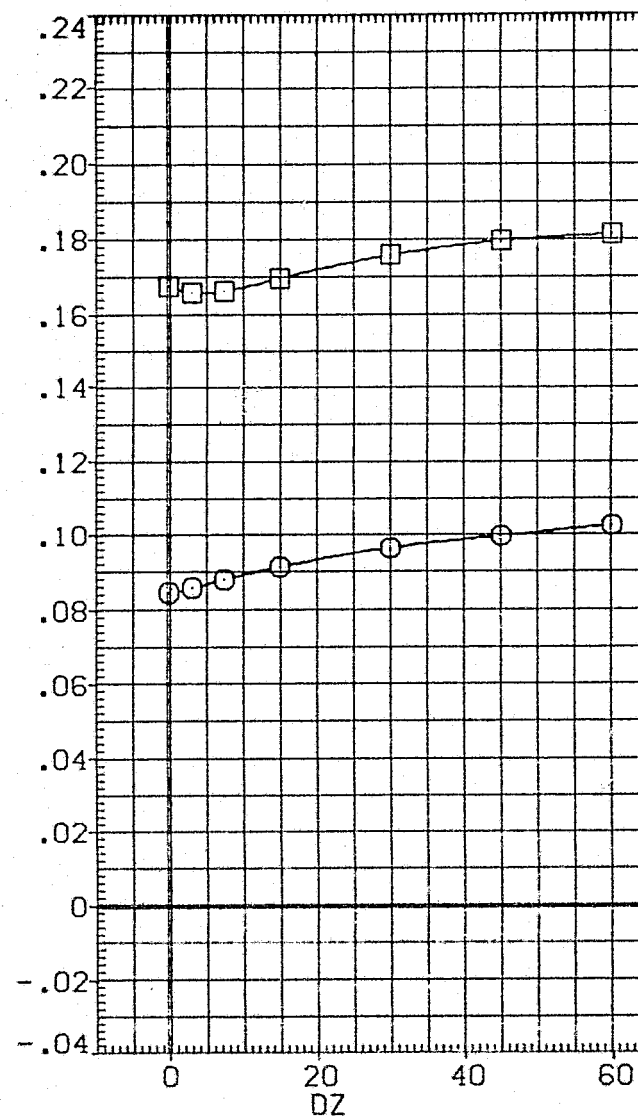
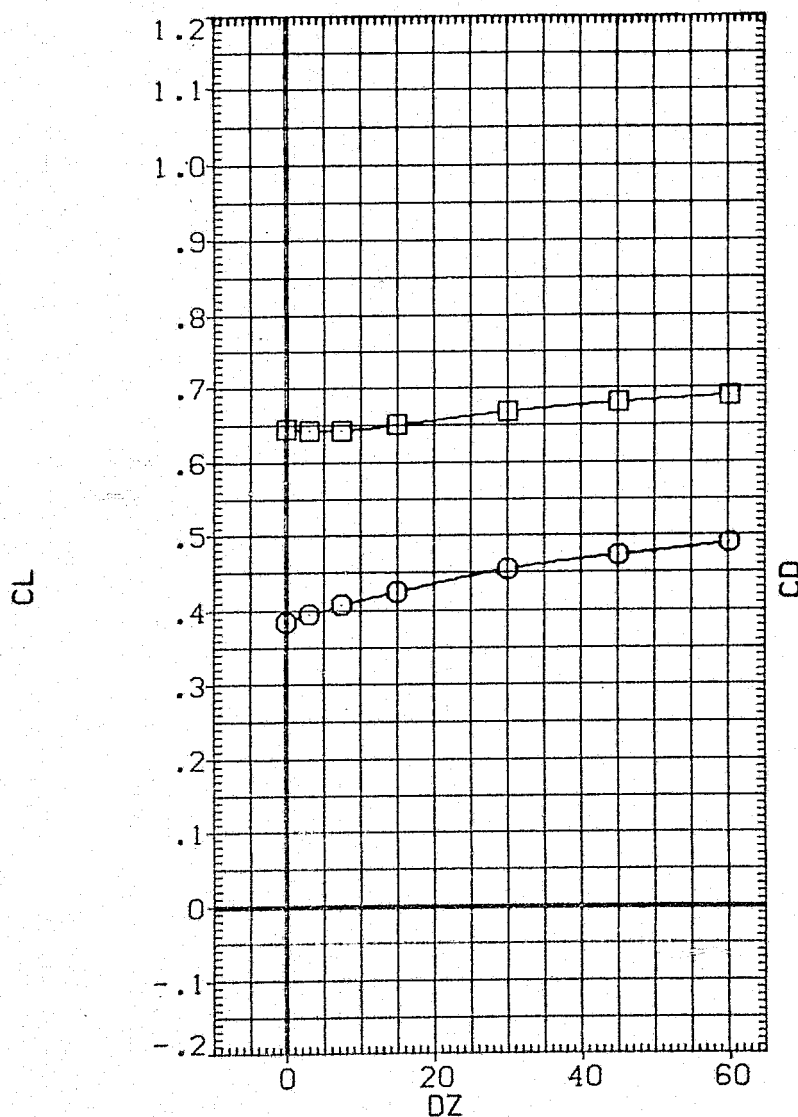


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN129)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	10.000	BETAC	.000	ELV-IB .000
□	14.000	ELV-OB	3.000	ELEVON 5.000
		MACH	.600	BETA0 .000
		PHI	.000	DY .000
		DX	.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

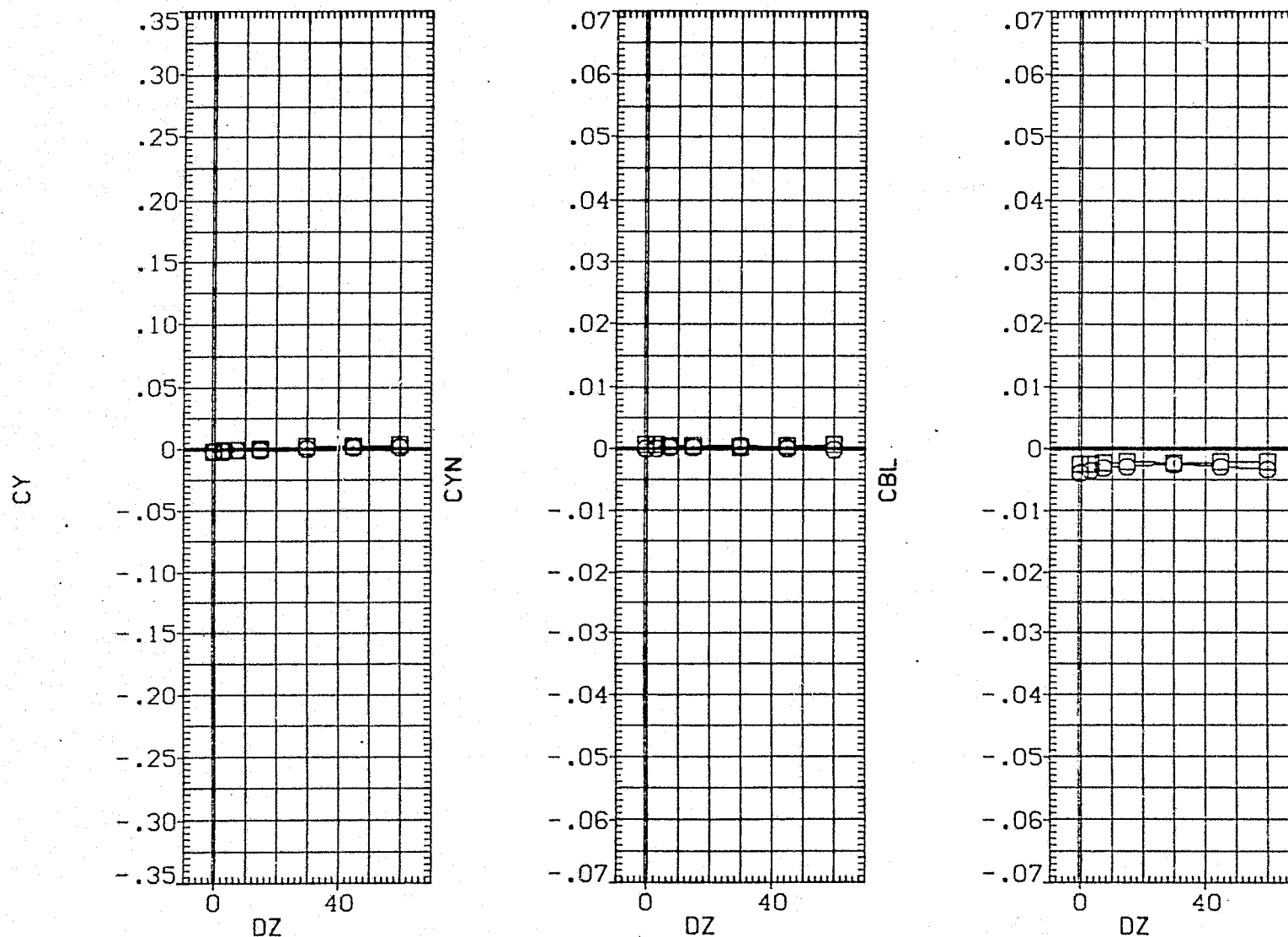


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (129 - 018) (VGN129)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 4.000	BETAC .000
□	14.000	ELV-IB .000	ELV-OB 3.000
		ELEVON 5.000	MACH .600
		PHI .000	OX .000
		DY .000	BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

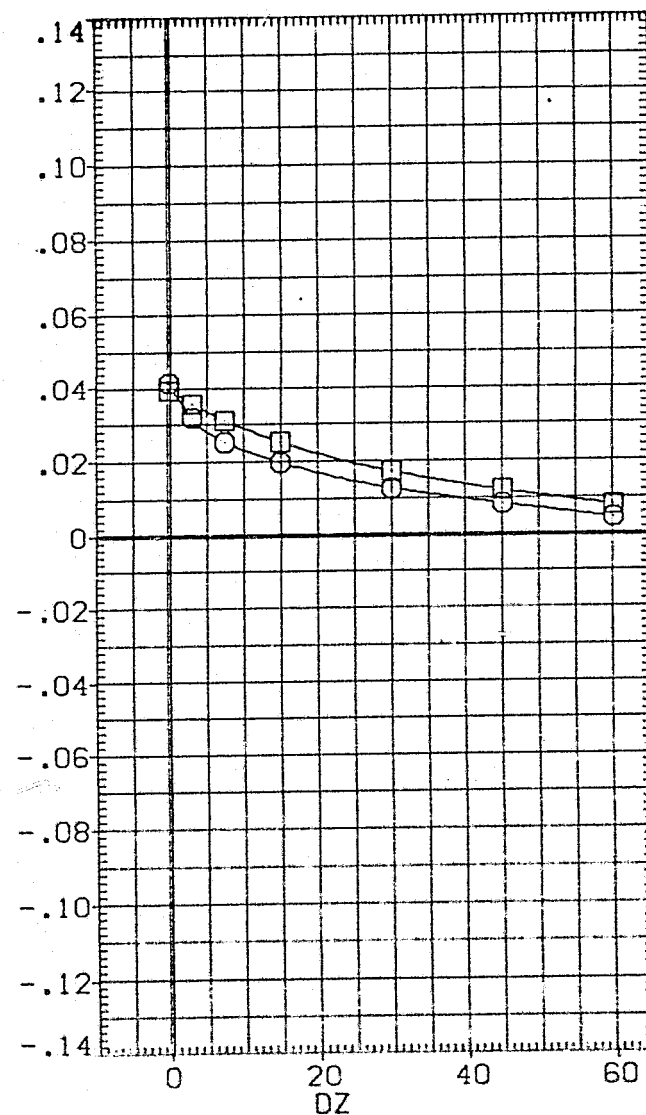
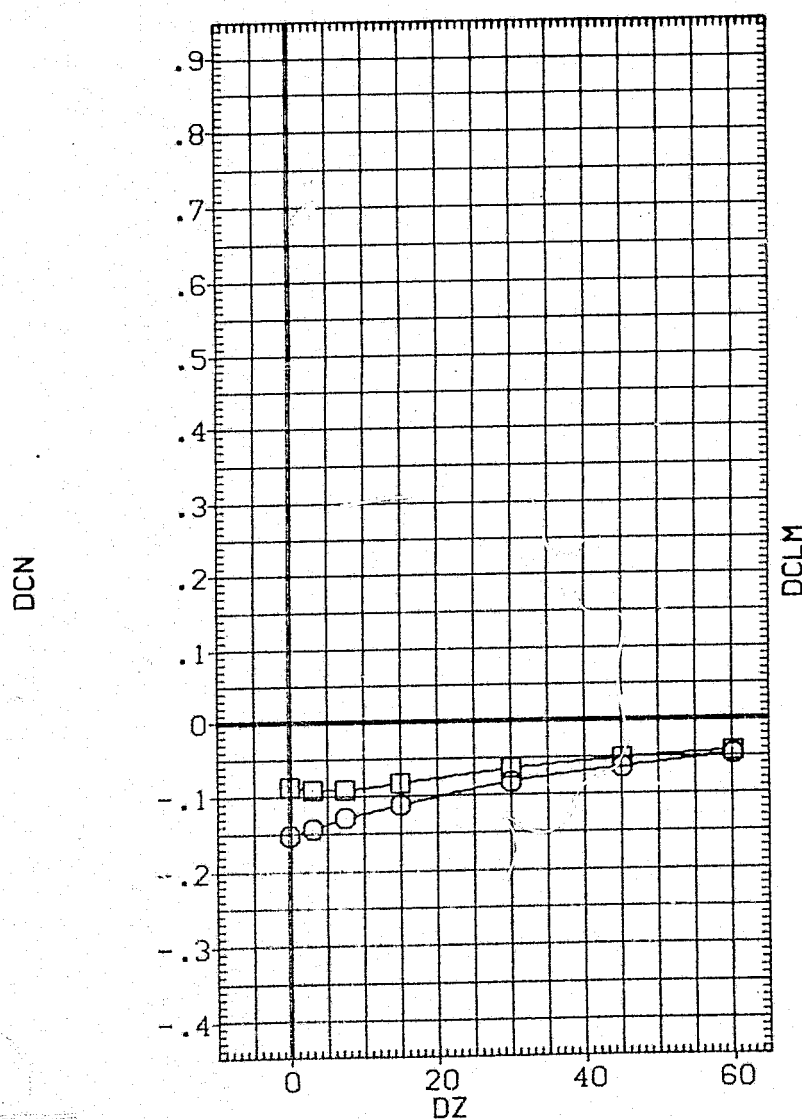


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (129 - 018) (VGN129)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0360

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

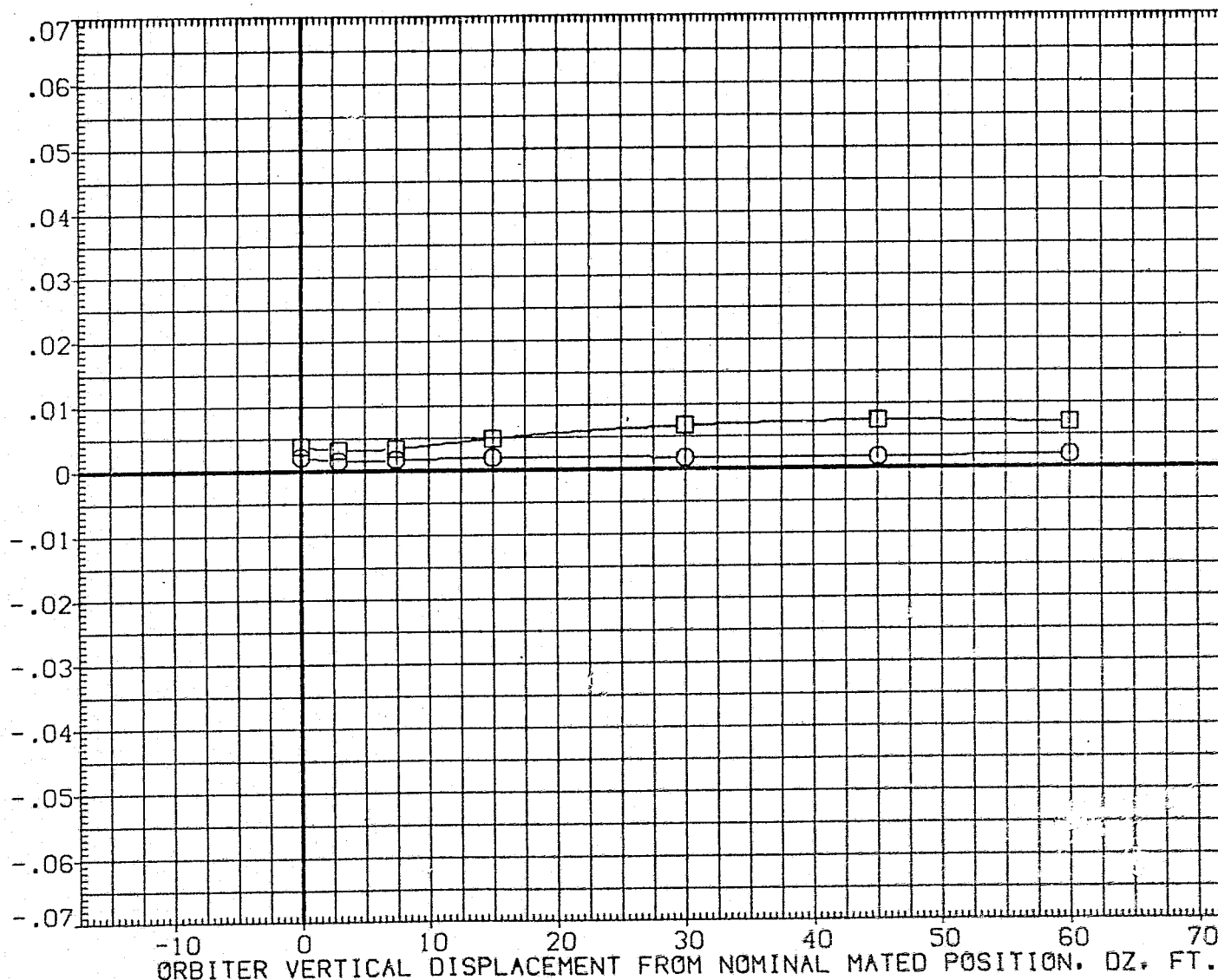


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

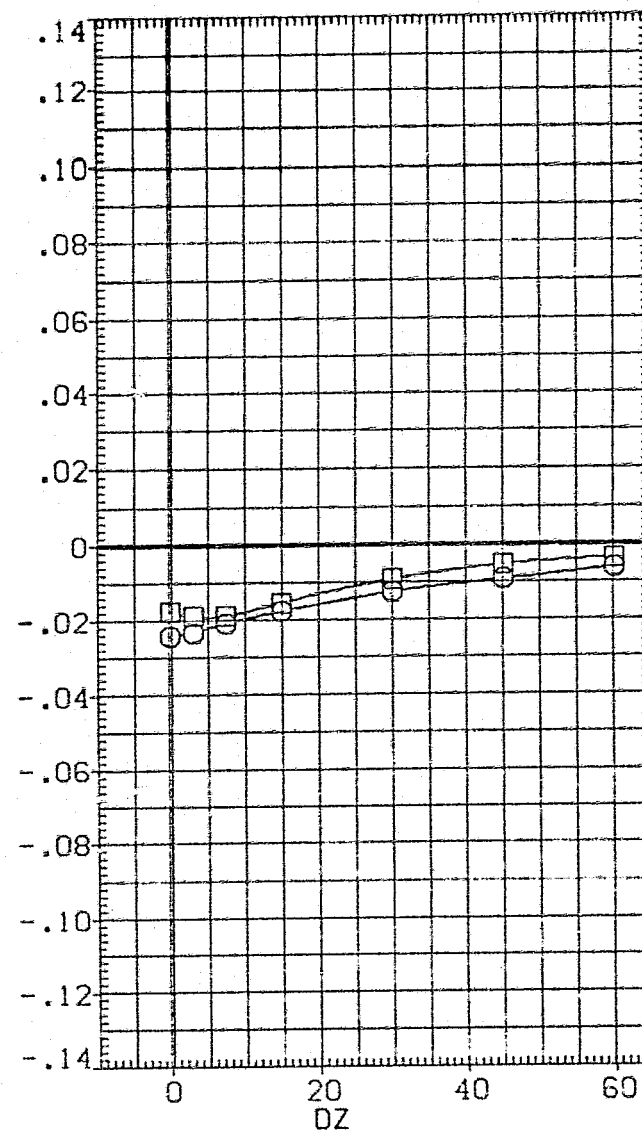
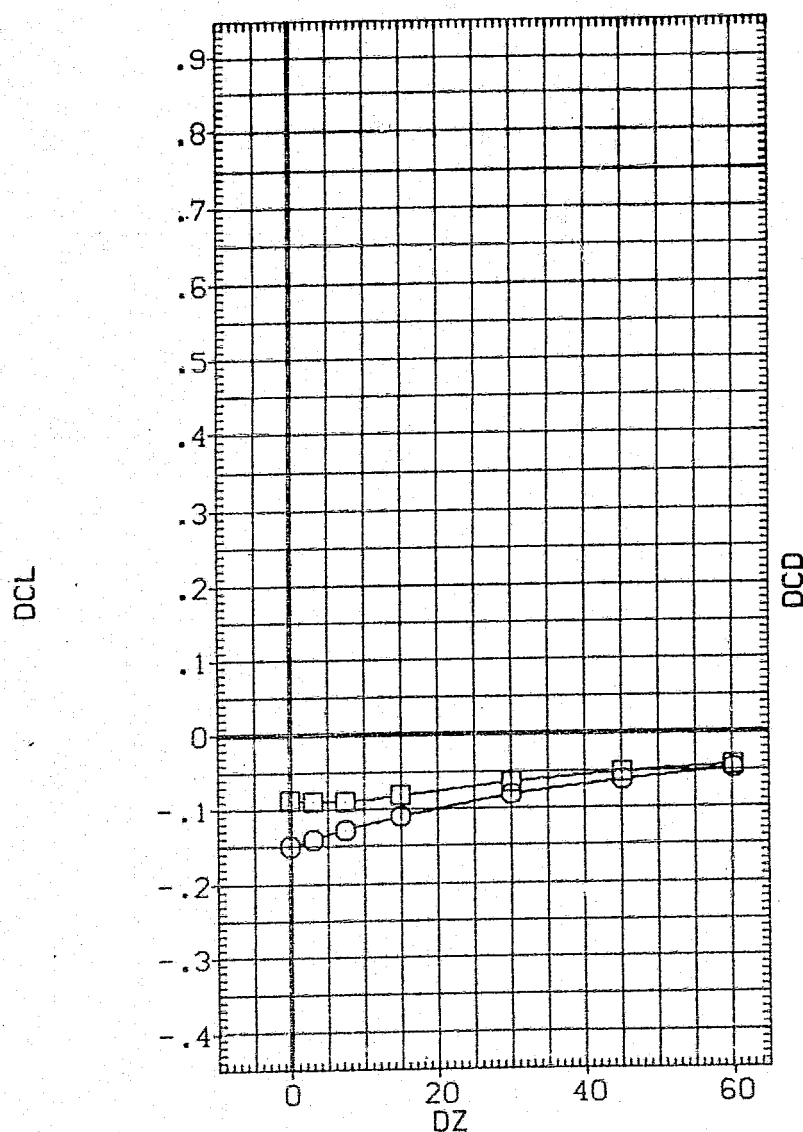


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN130)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	10.000	BETAC	.000	ELV-1B .000
□	14.000	ELV-0B	3.000	ELEVON 5.000
		MACH	.600	BETA0 .000
		PHI	.000	DY .000
		DX	10.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

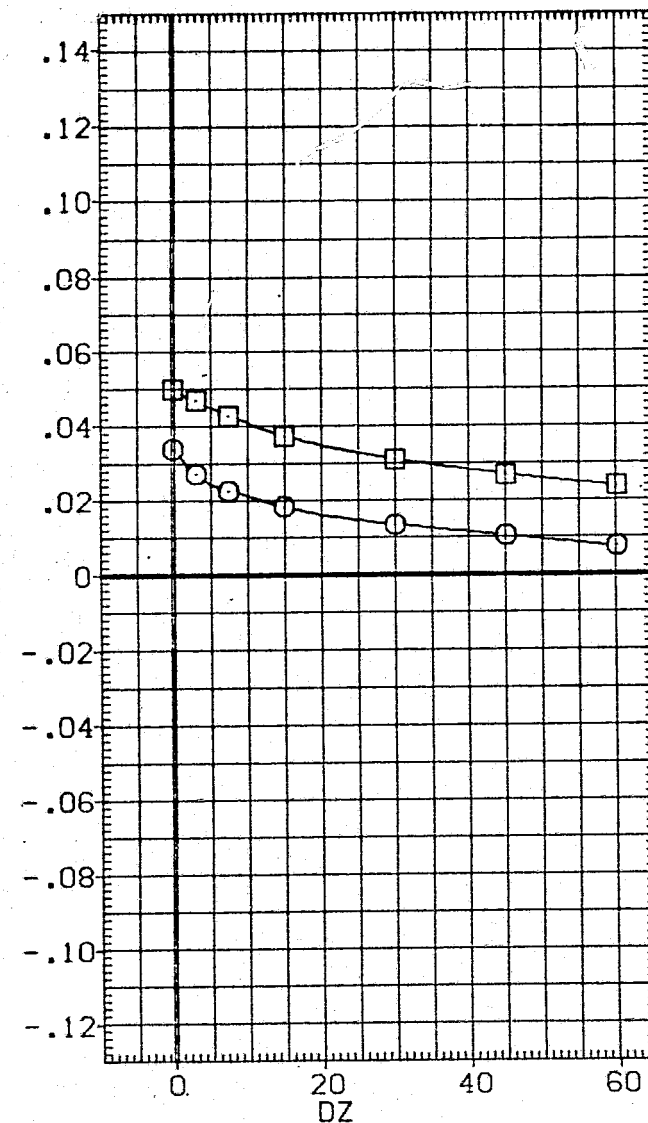
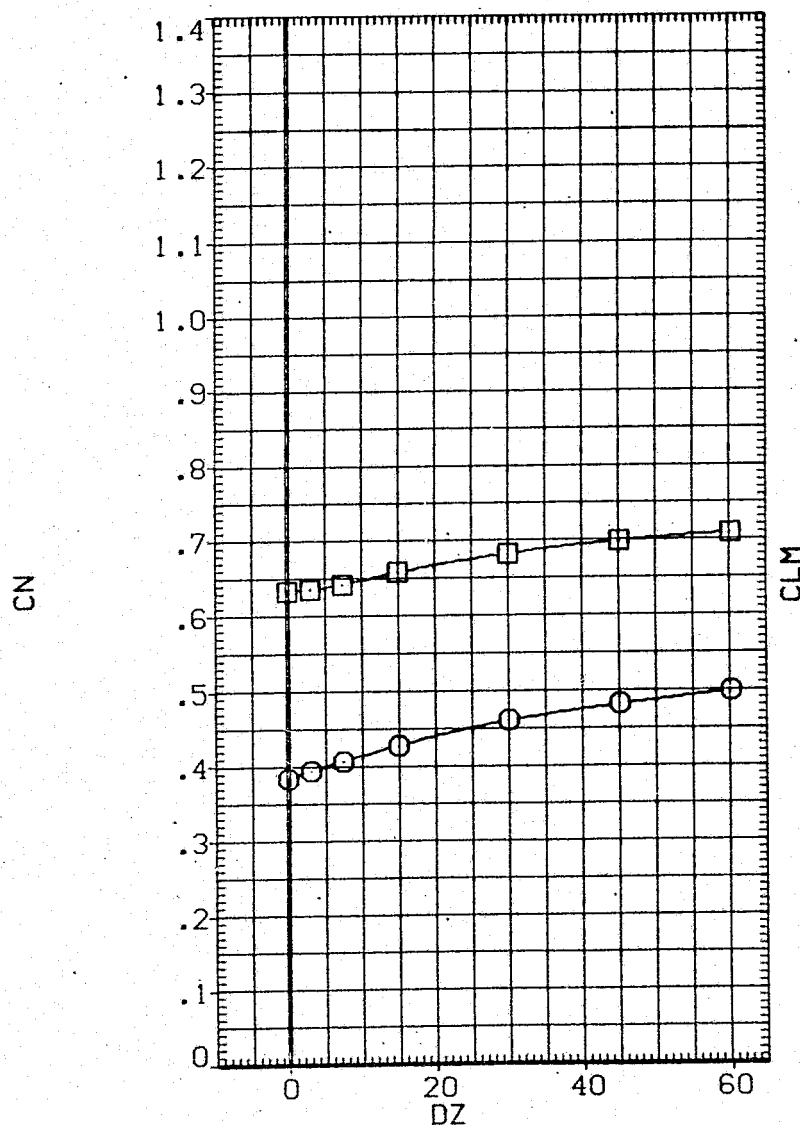


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-18	
○	10.000	.000	ELV-08	5.000	
□	14.000	3.000	BETA0	.000	
		.600	DY	.000	
		.000	ALPHAC	4.000	
		10.000			

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

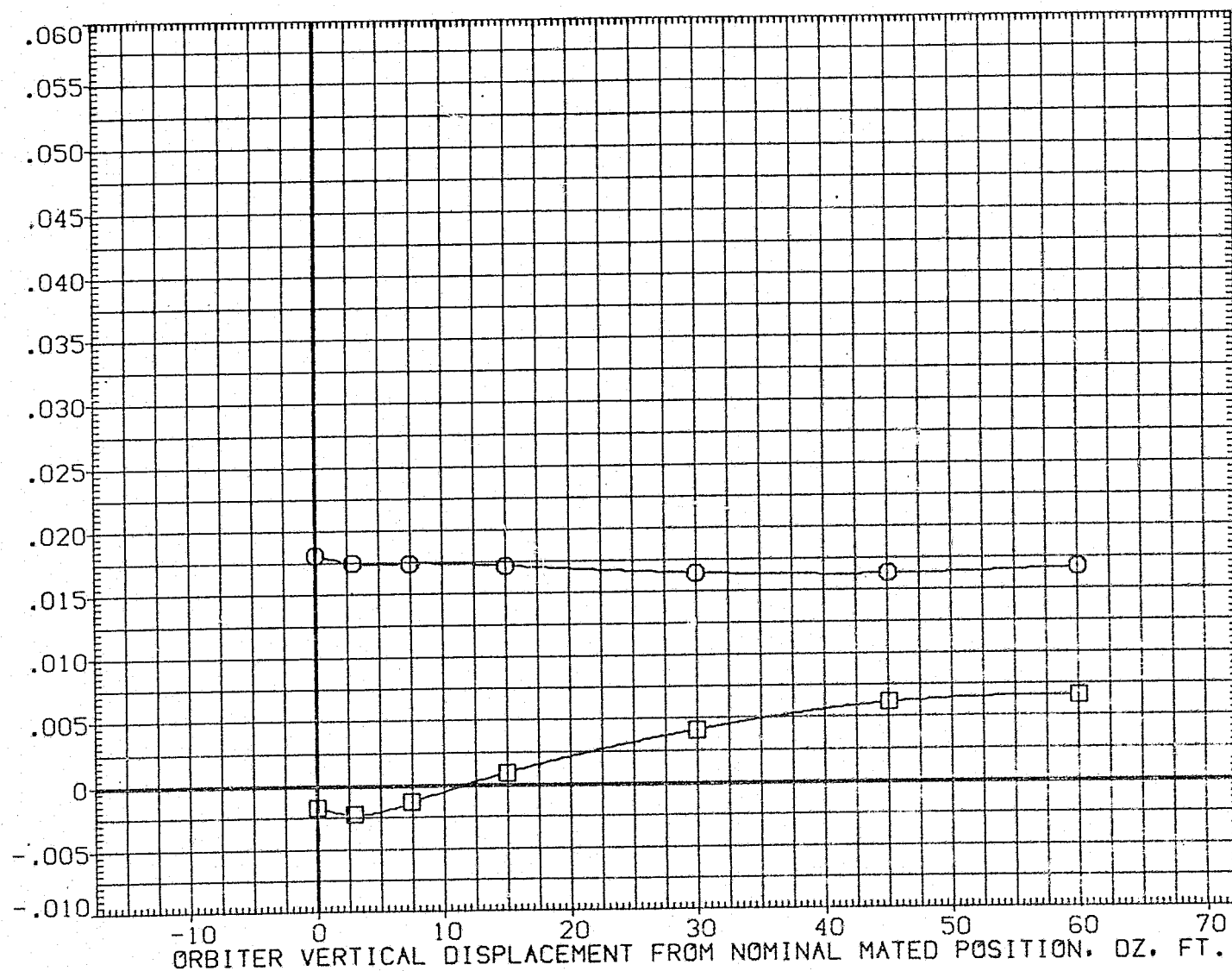


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN130)

SYMBOL

○
□

ALPHA0

10.000

14.000

BETAC

ELV-08

MACH

PHI

DX

PARAMETRIC VALUES

.000

3.000

.600

.000

10.000

ELV-18

ELEVON

BETA0

DY

ALPHAC

.000

5.000

.000

.000

4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

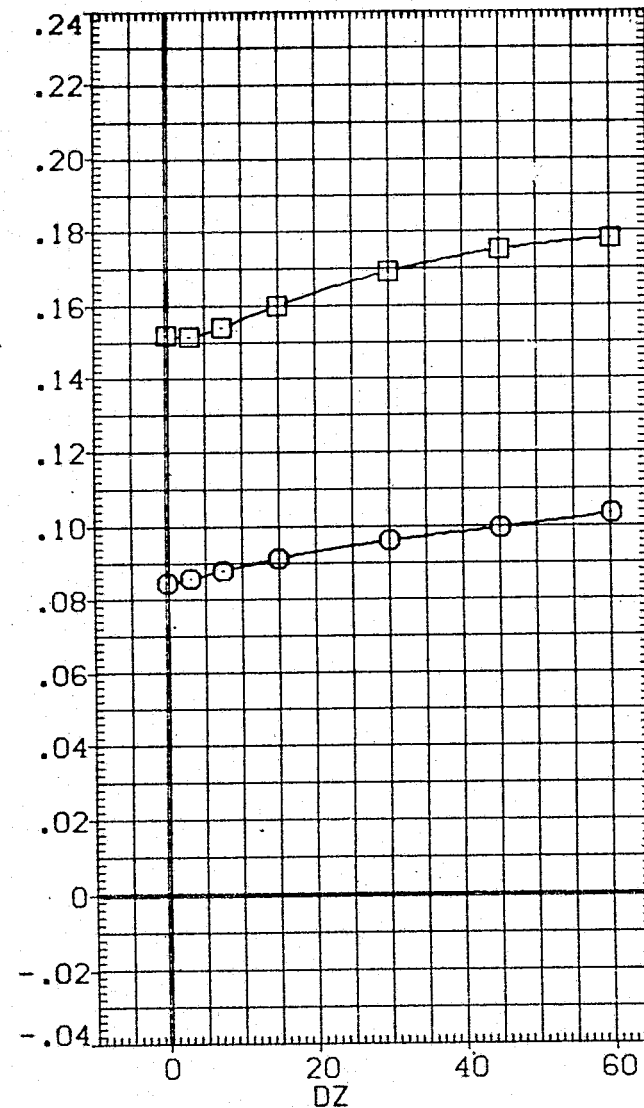
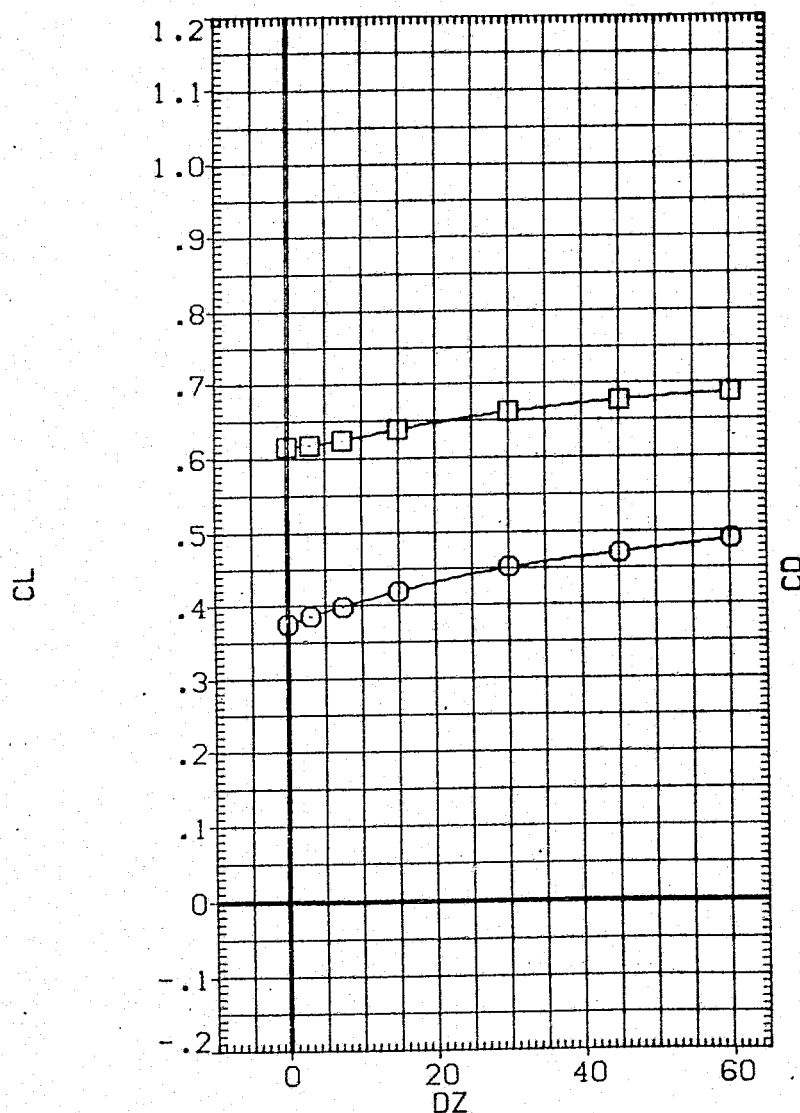


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN130)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES
○	10.000	.000	ELV-1B
□	14.000	3.000	ELEVON
		.600	BETA0
		.000	DY
		10.000	ALPHAC
			4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

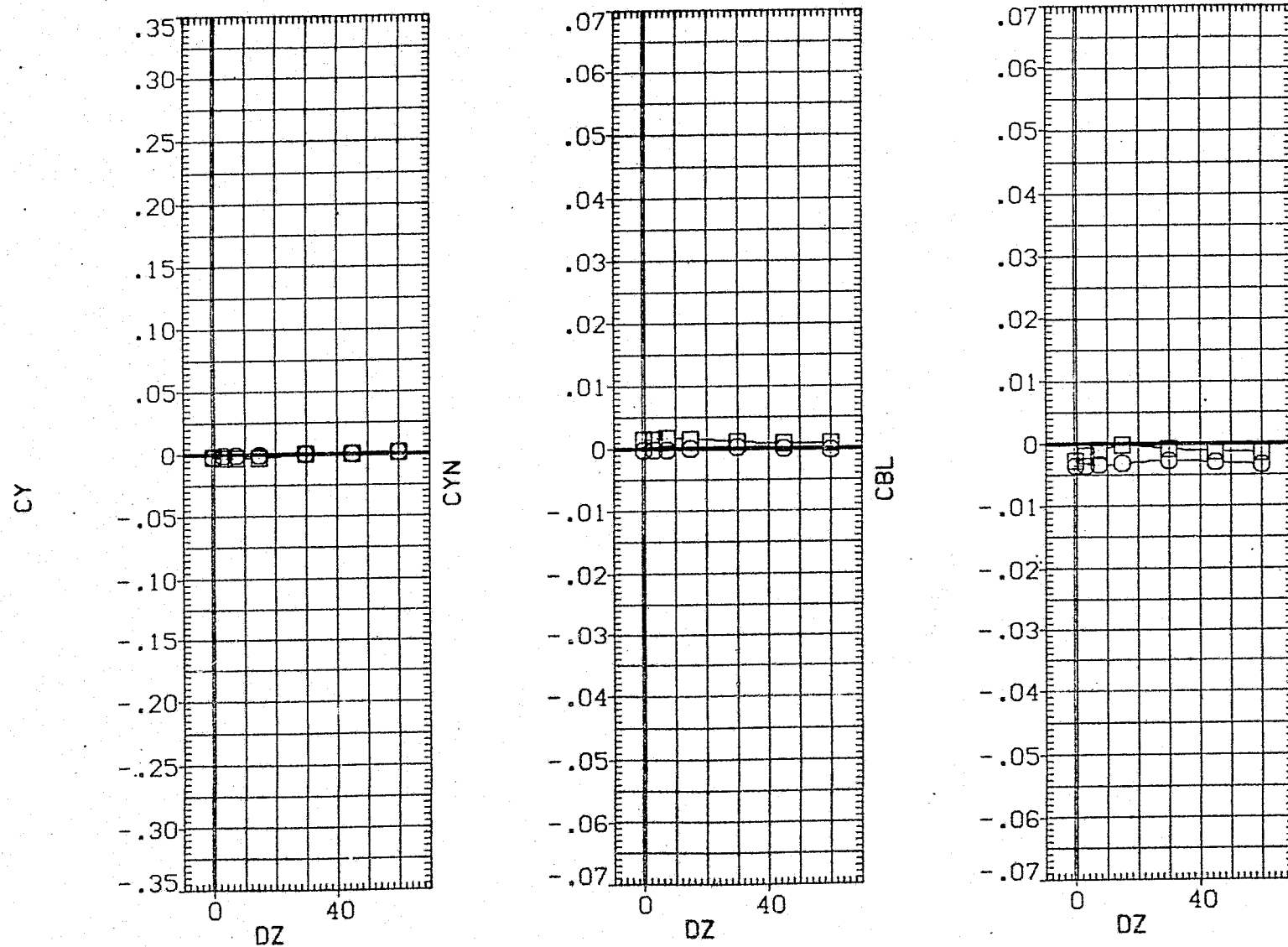


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (130 - 018)(VGN130)

SYMBOL



ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

.000

ELV-1B

.000

ELV-0B

3.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

10.000

DY

.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000

50.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

DCN

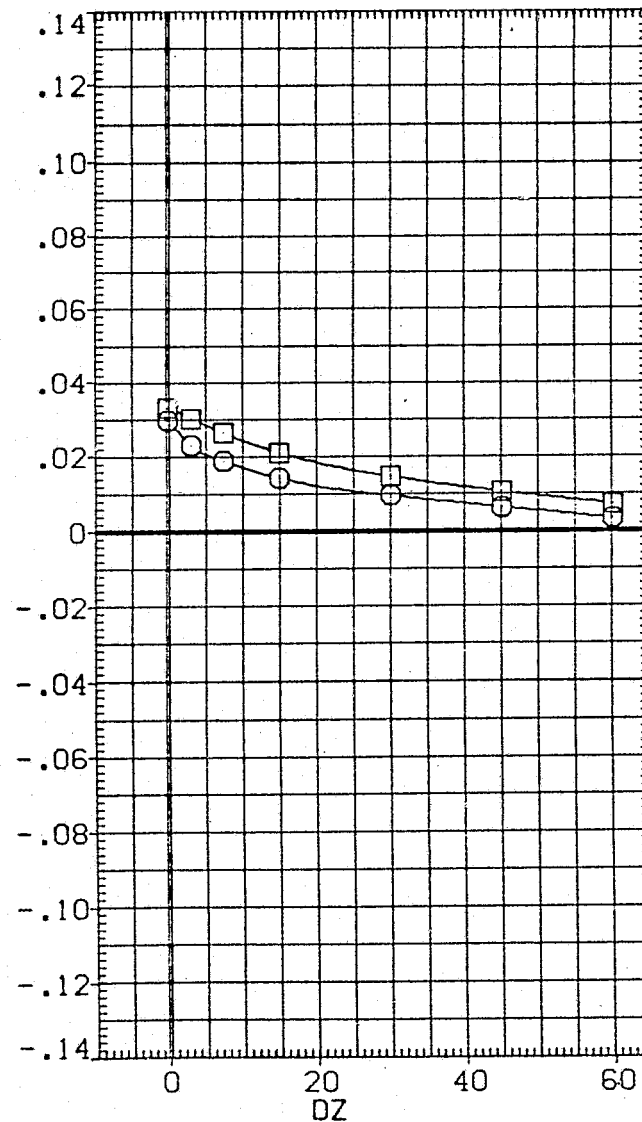
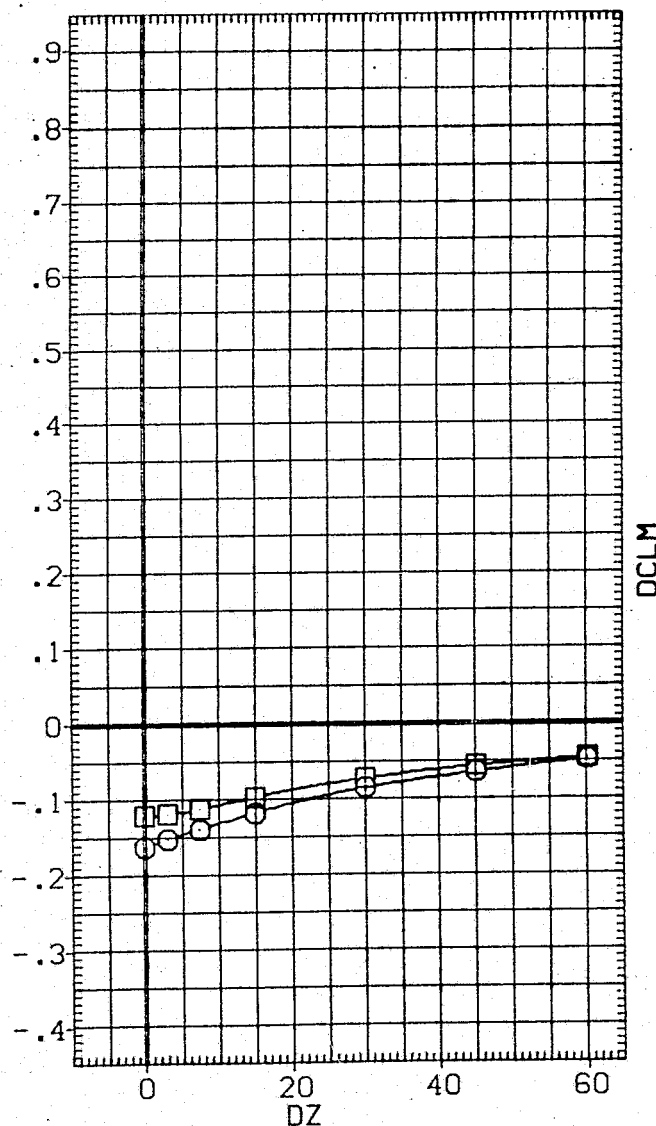


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (130 - 018)(VGN130)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

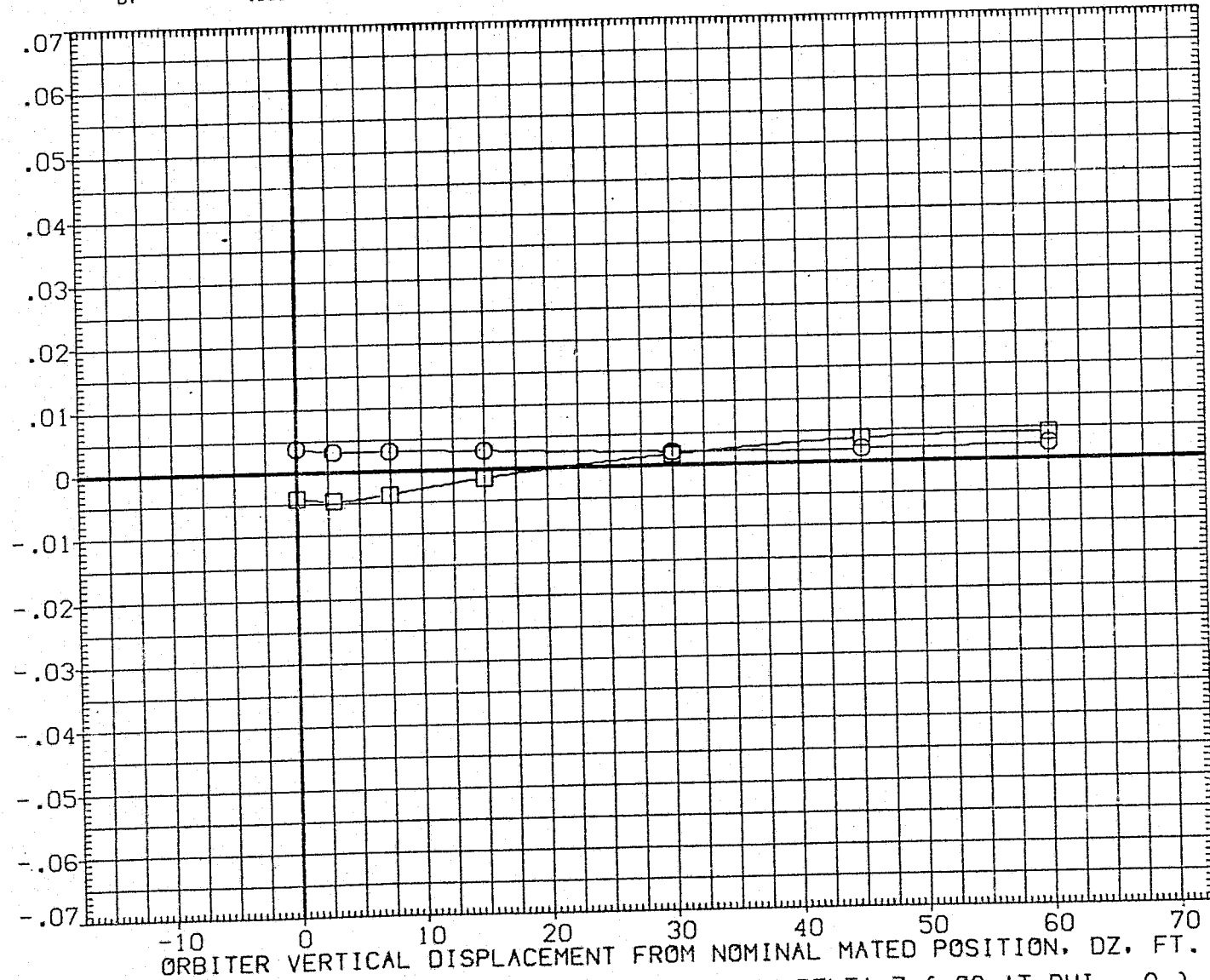


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (130 - 018) (VGN130)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-18	.000	ELV-08	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

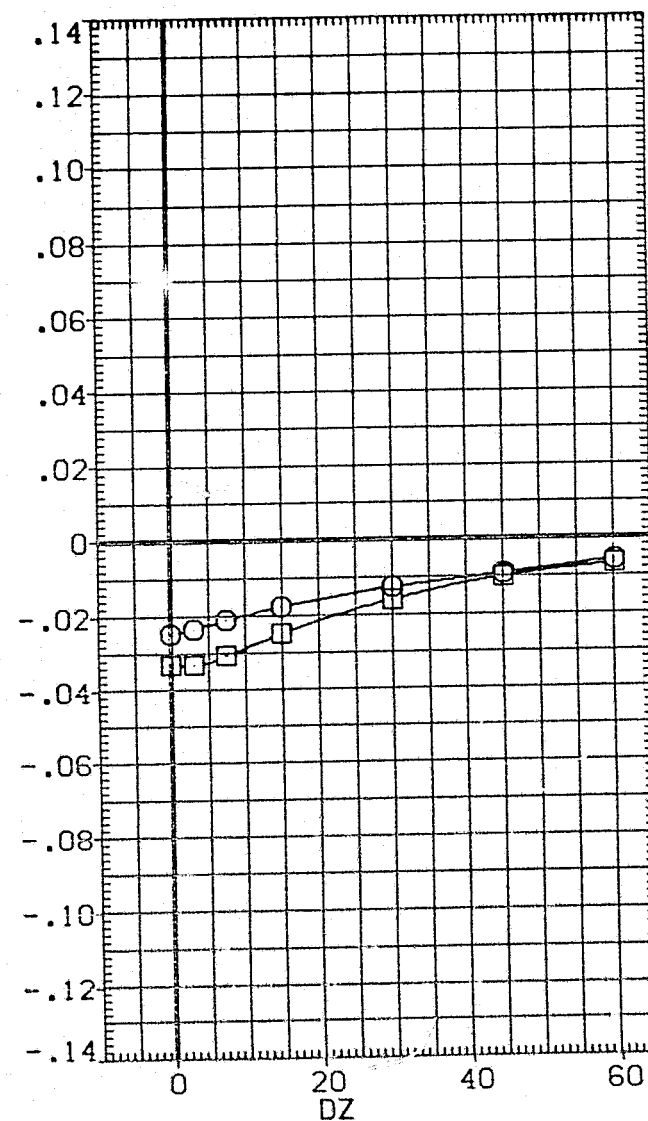
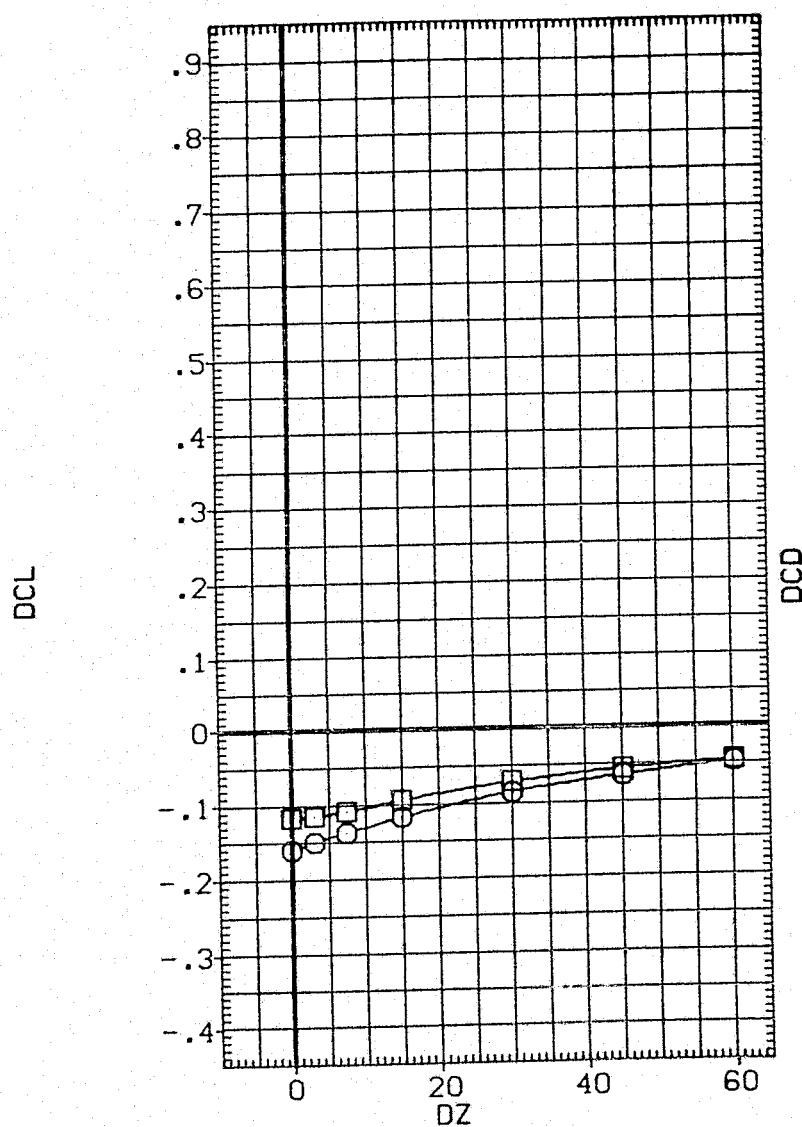


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	10.000	.000	ELV-1B	.000
□	14.000	3.000	ELEVON	5.000
		.600	BETA0	.000
		.000	DY	.000
		20.000	ALPHAC	4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

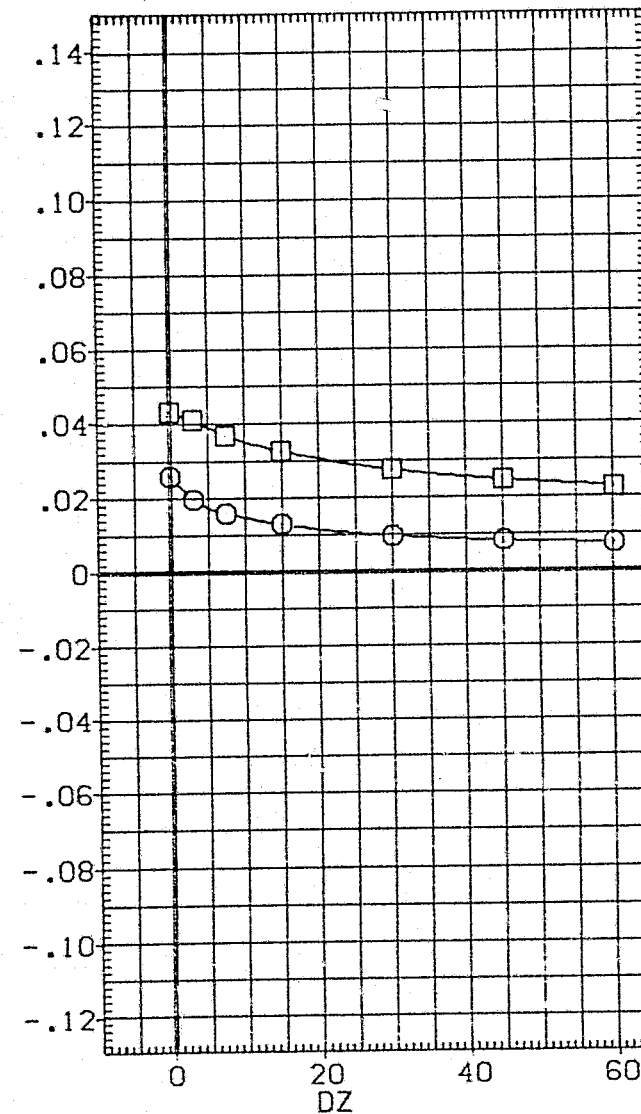
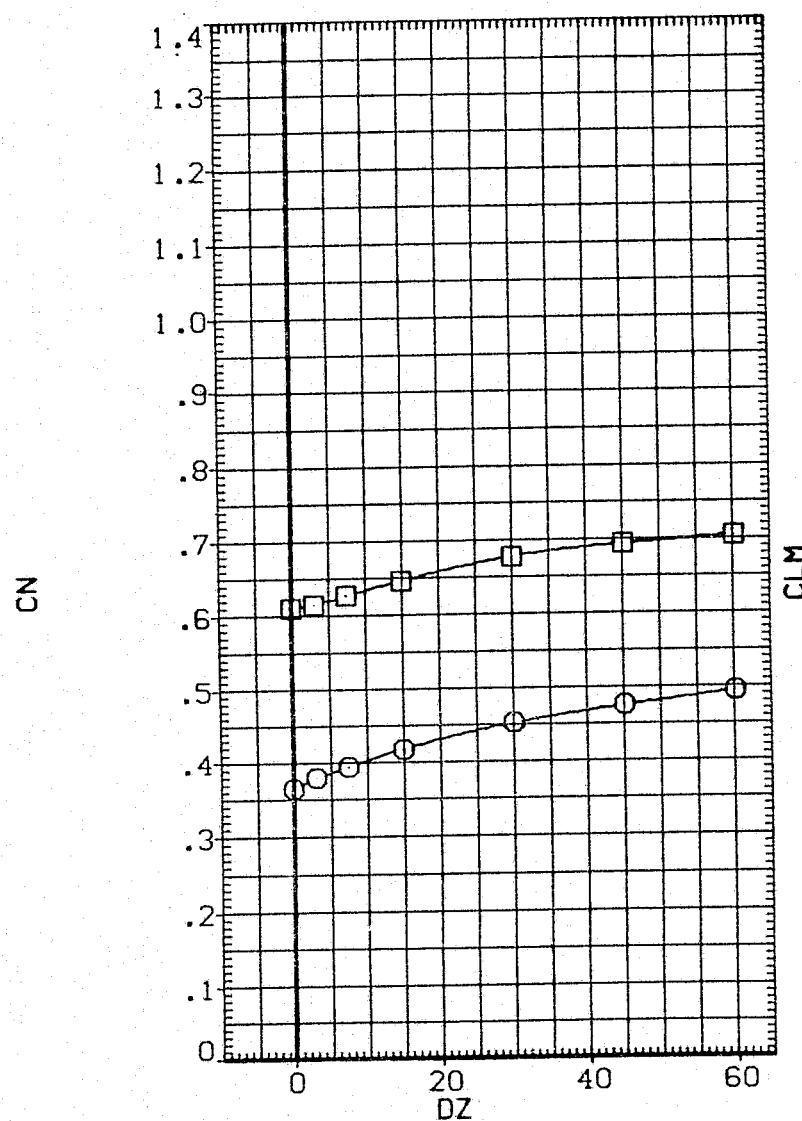


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA(NGN131)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	BETAC	.000	ELV-18	.000	
	14.000	ELV-08	3.000	ELEVON	5.000	
		MACH	.600	BETA0	.000	
		PHI	.000	DY	.000	
		DX	20.000	ALPHAC	4.000	

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.ZC
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

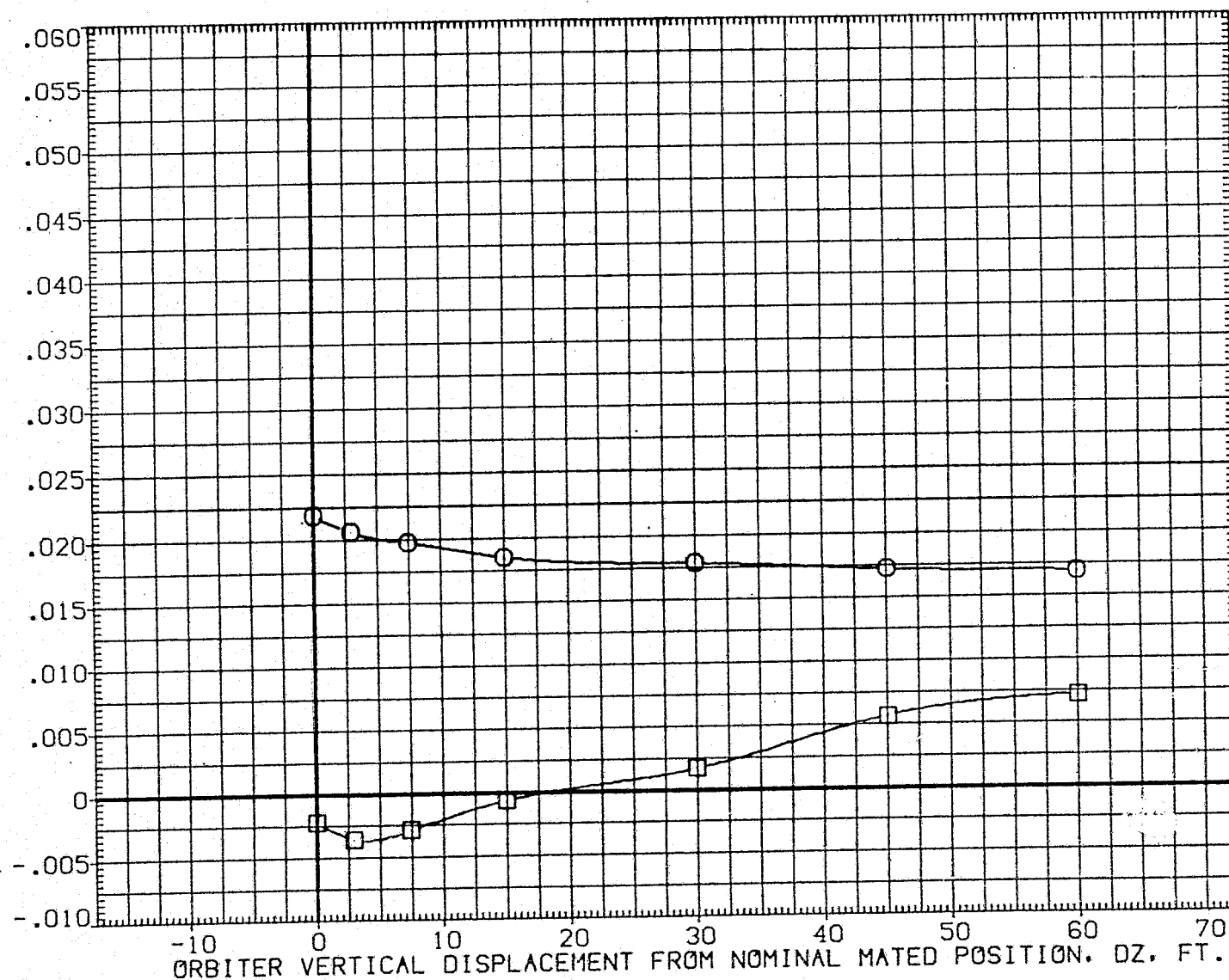


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-IB	
○	10.000	.000	3.000	5.000	
□	14.000	ELV-08	.600	BETA0	.000
		MACH	.000	DY	.000
		PHI	20.000	ALPHAC	4.000
		DX			

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

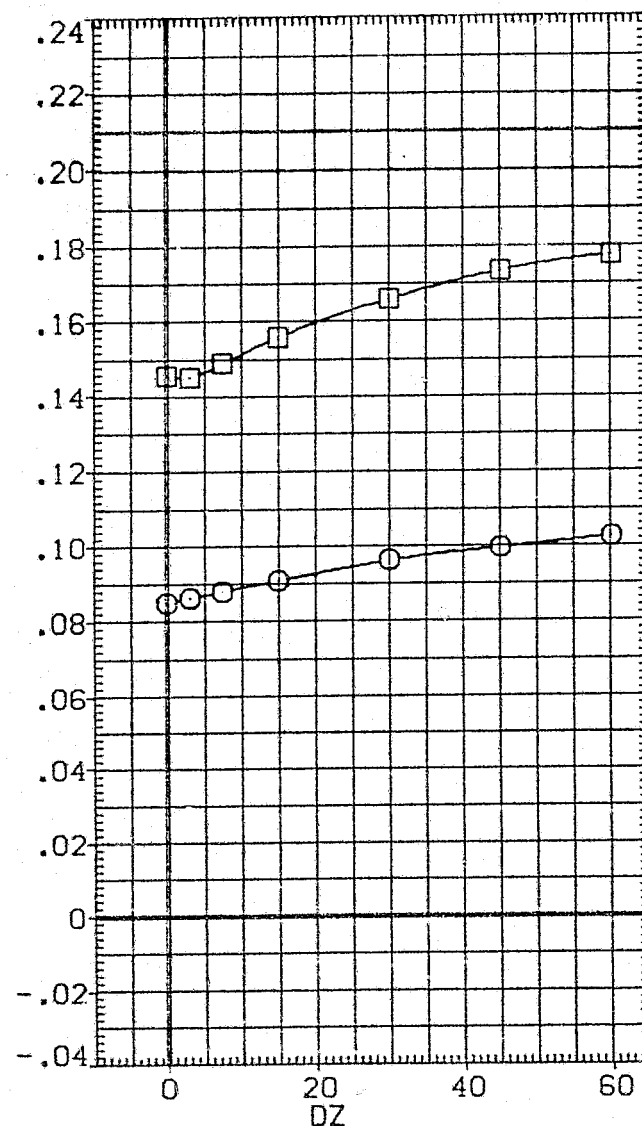
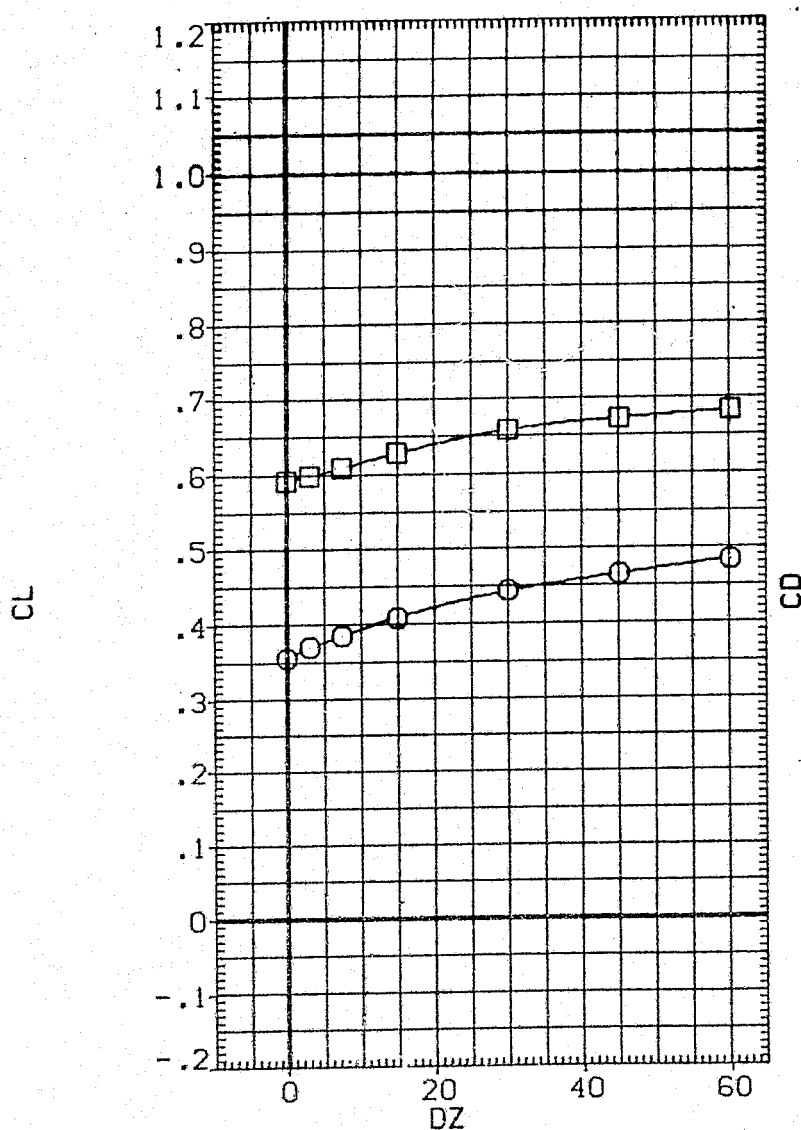


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN131)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	BETAC	.000	ELV-1B	.000
□	14.000	ELV-0B	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	20.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

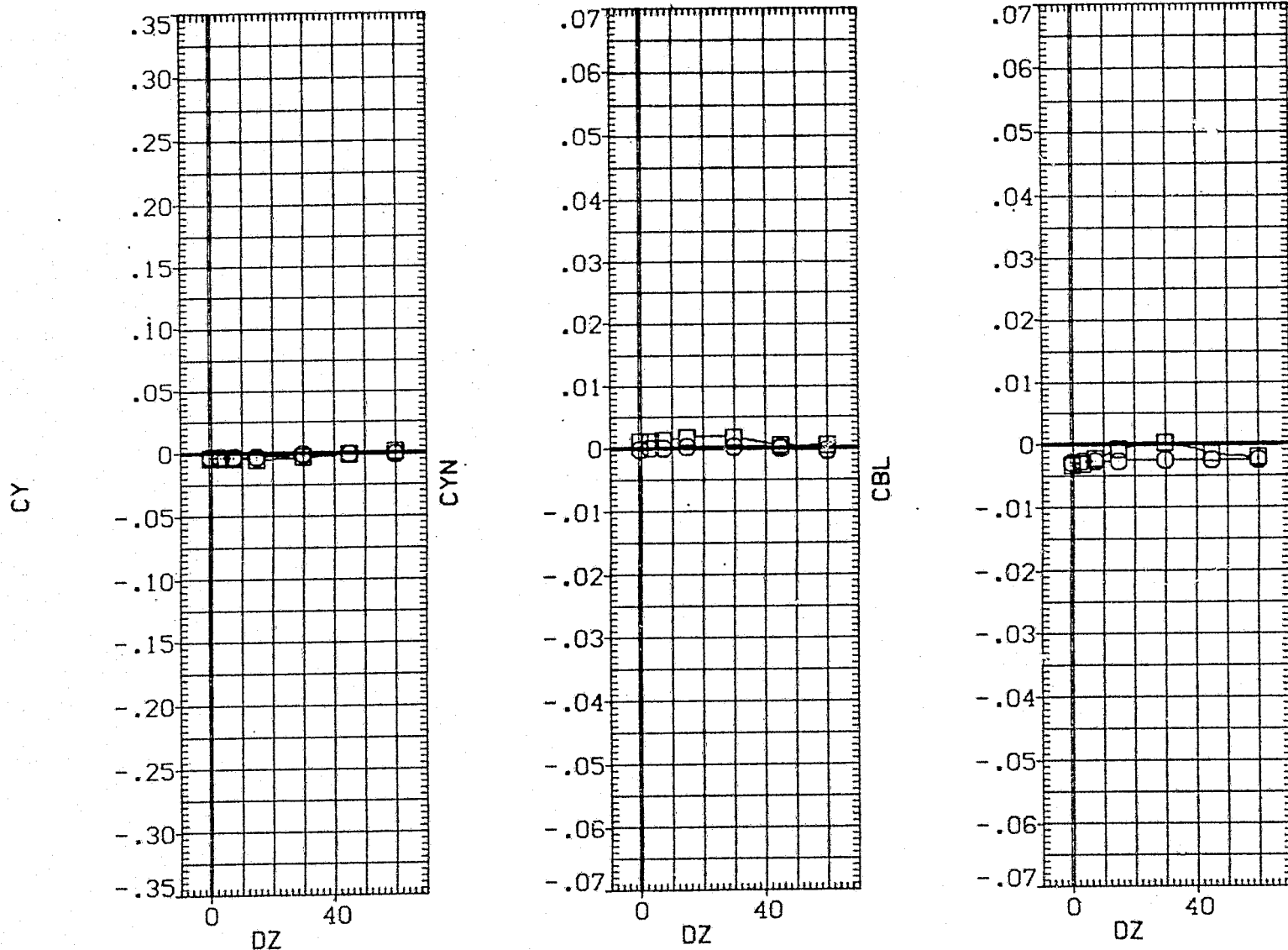


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (131 - 018) (VGN131)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
□	14.000	ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

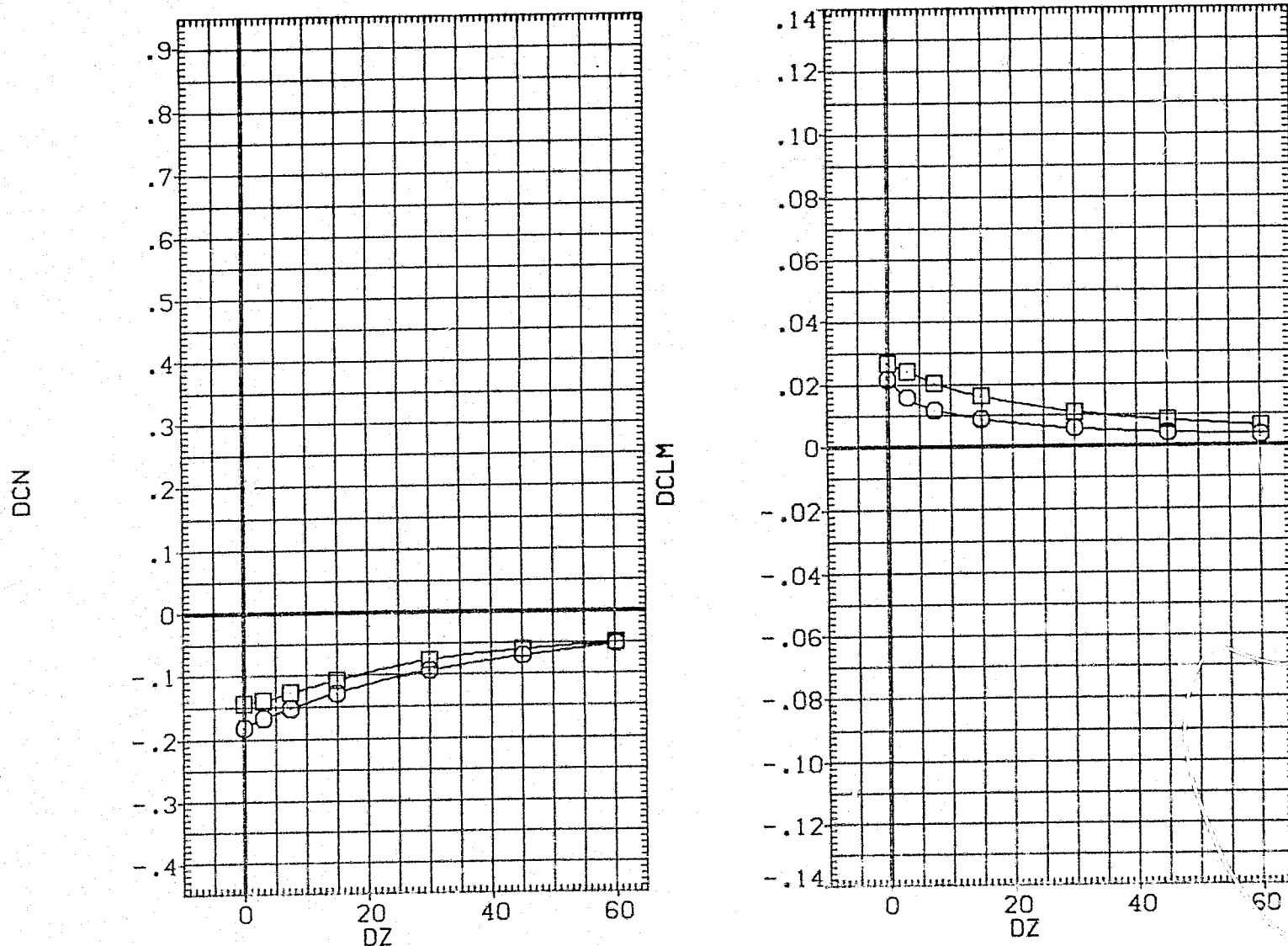


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (131 - 018)(VGN131)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

.000

BETAC

ELV-OB

MACH

DX

BETA0

.000

3.000

.600

20.000

.000

REFERENCE INFORMATION

SREF

2590.0000

50.FT.

LREF

474.8100

IN.

BREF

936.3800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

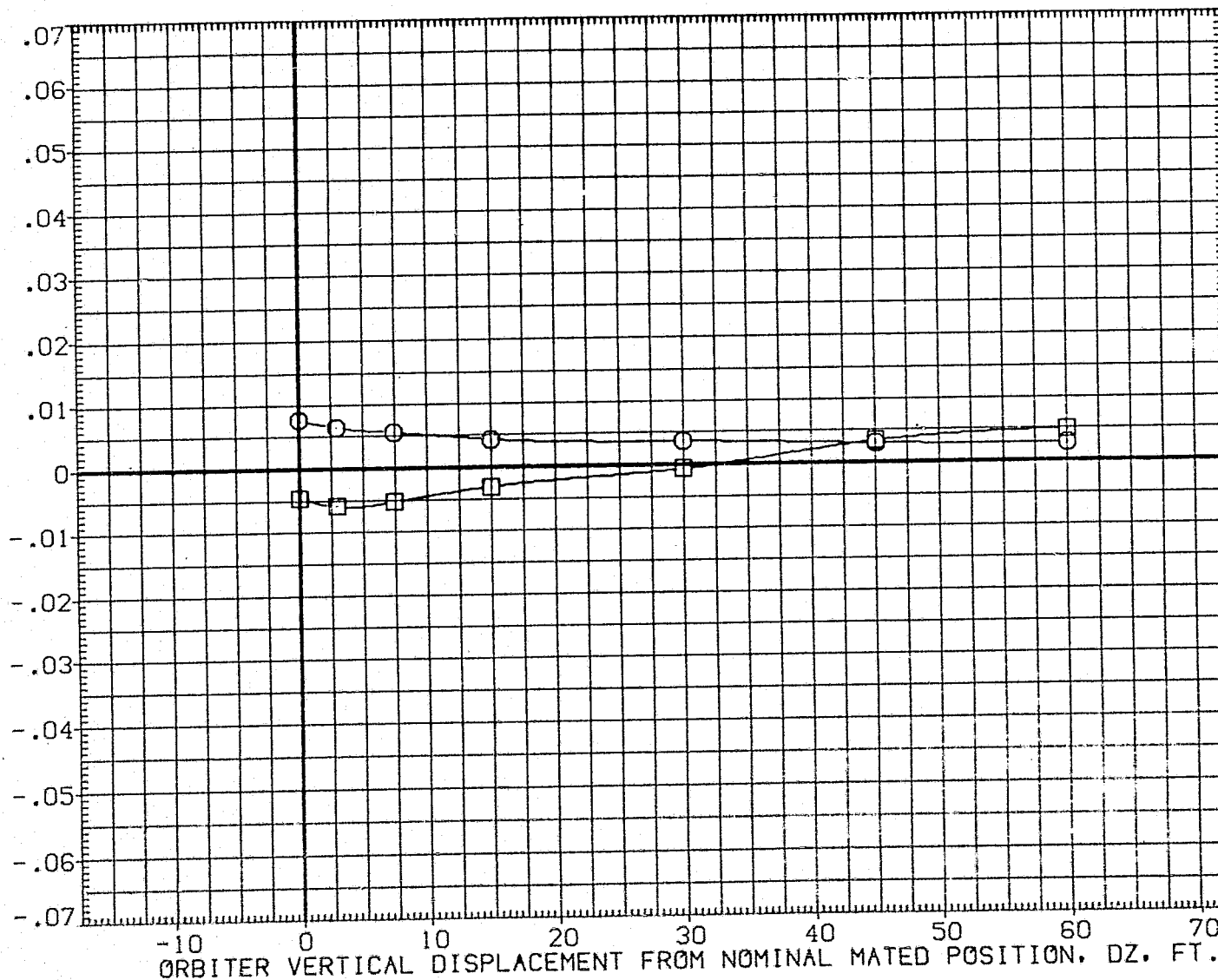


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL



ALPHA0

10.000

14.000

ALPHA0

ALPHA0

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

3.000

.600

20.000

.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

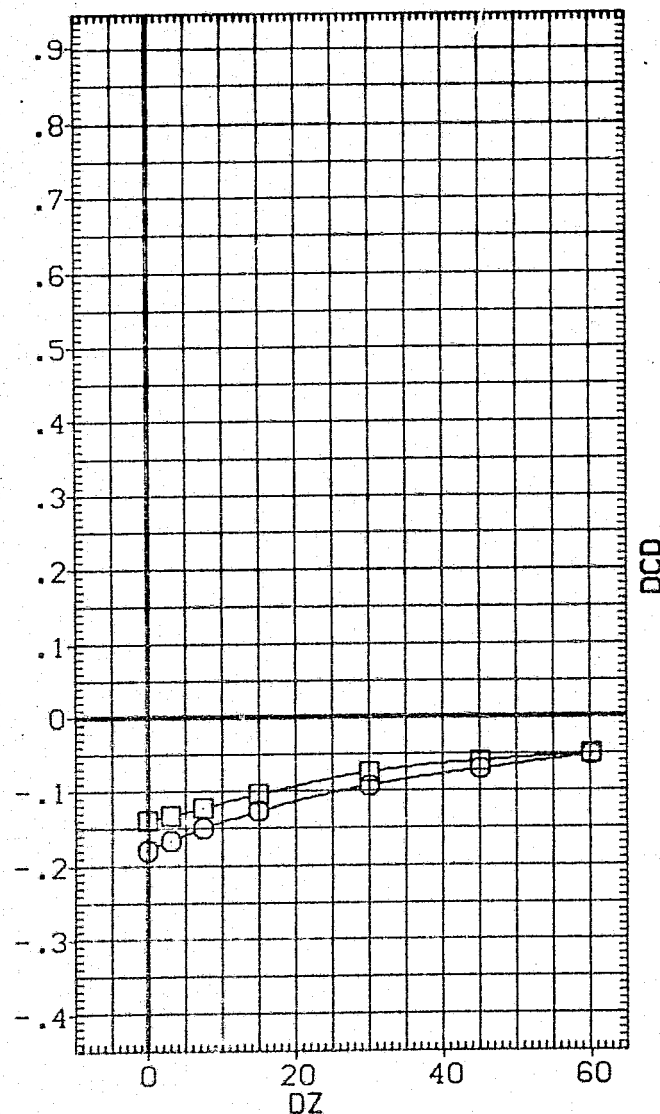
IN.

IN.X0

IN.Y0

IN.Z0

DCL



DCD

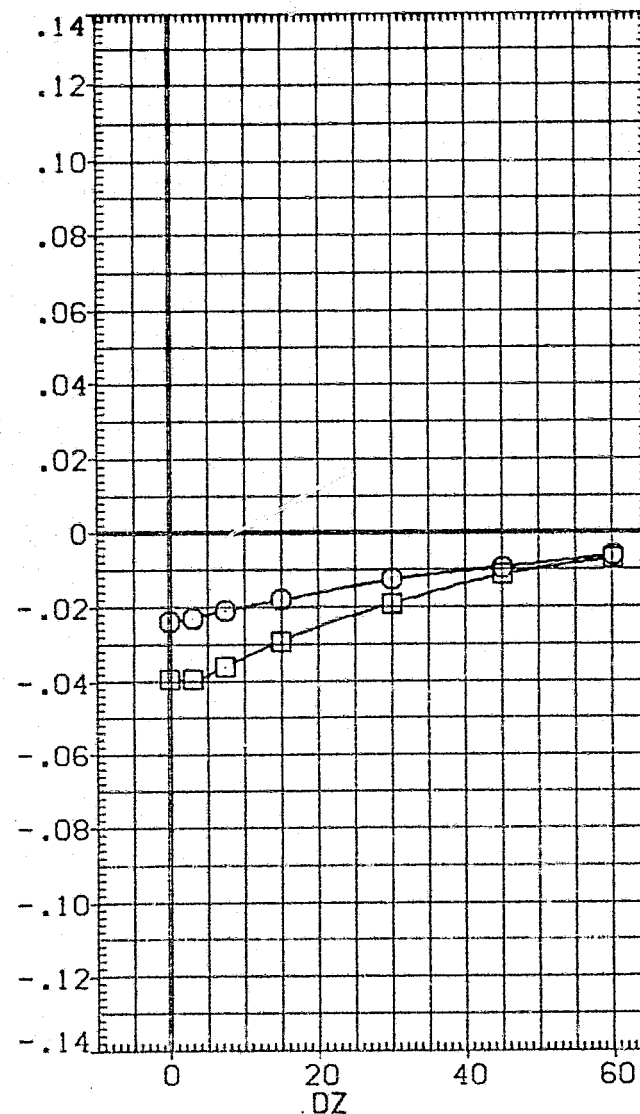


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN132)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	BETAC	.000	ELV-18	.000	
○	14.000	ELV-08	3.000	ELEVON	5.000	
□		MACH	.600	BETA0	.000	
		PHI	.000	DY	.000	
		DX	.000	ALPHAC	8.000	

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

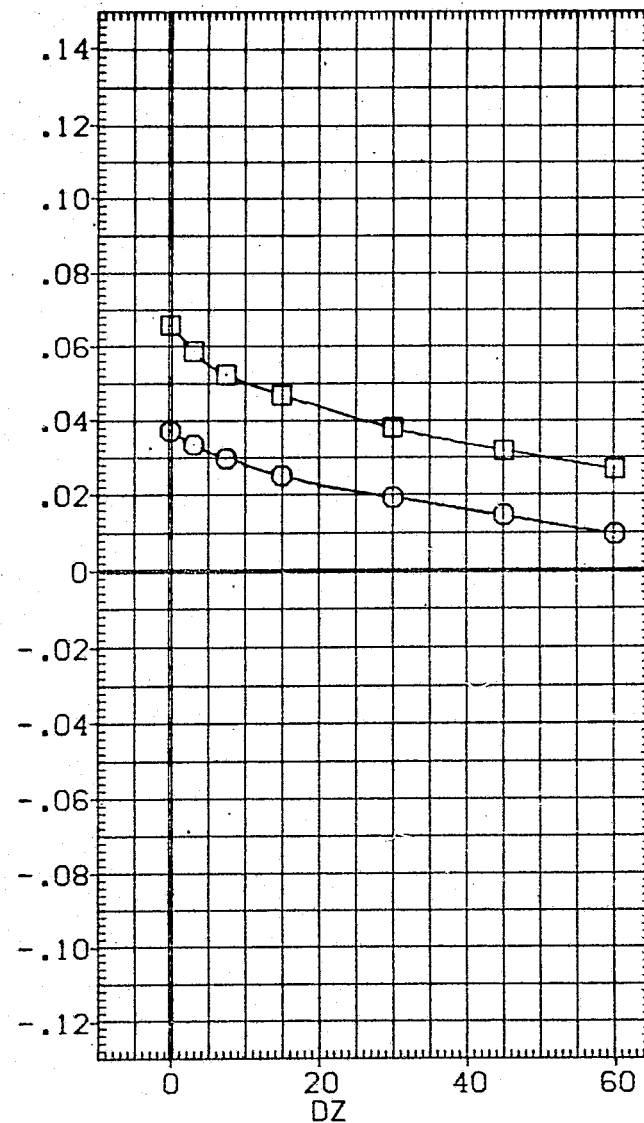
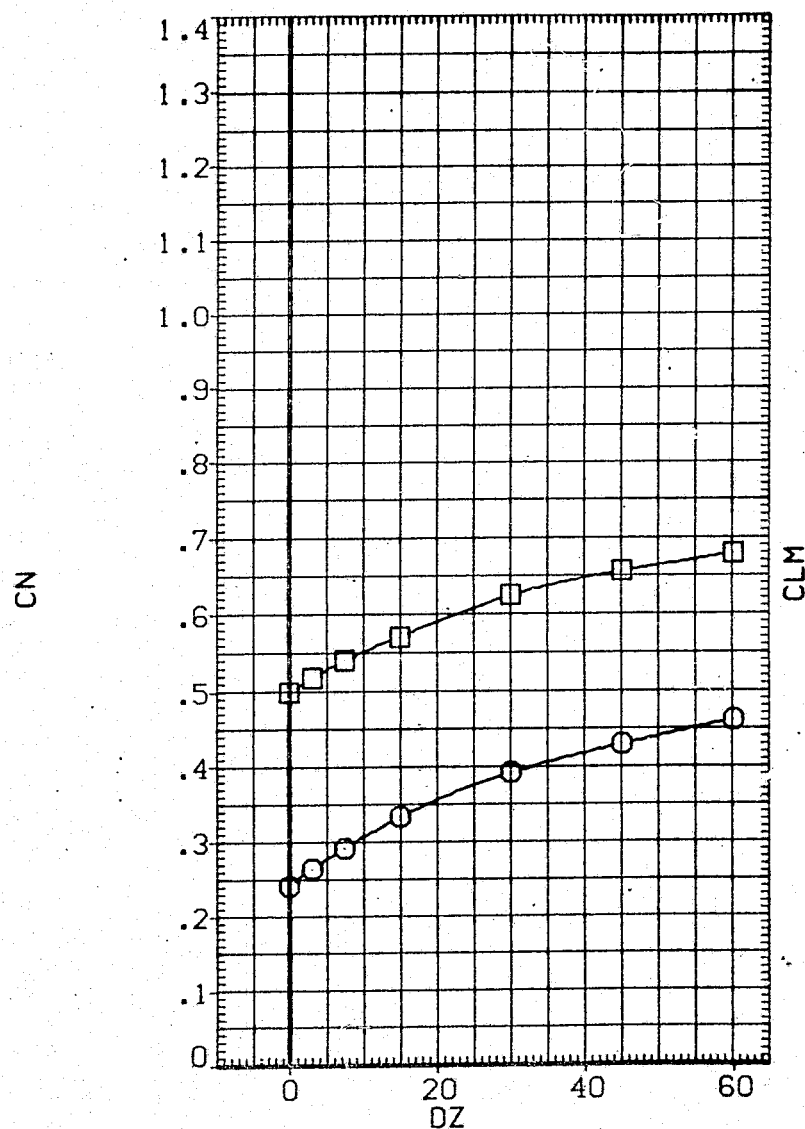


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES				REFERENCE INFORMATION		
	10.000	BETAC	.000	ELV-1B	.000		SREF	2690.0000	50.FT.
○	14.000	ELV-0B	3.000	ELEVON	5.000		LREF	474.8100	IN.
□		MACH	.600	BETA0	.000		BREF	936.6800	IN.
		PHI	.000	DY	.000		XMRP	1109.0000	IN.X0
		DX	.000	ALPHAC	8.000		YMRP	.0000	IN.Y0
							ZMRP	375.0000	IN.Z0
							SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

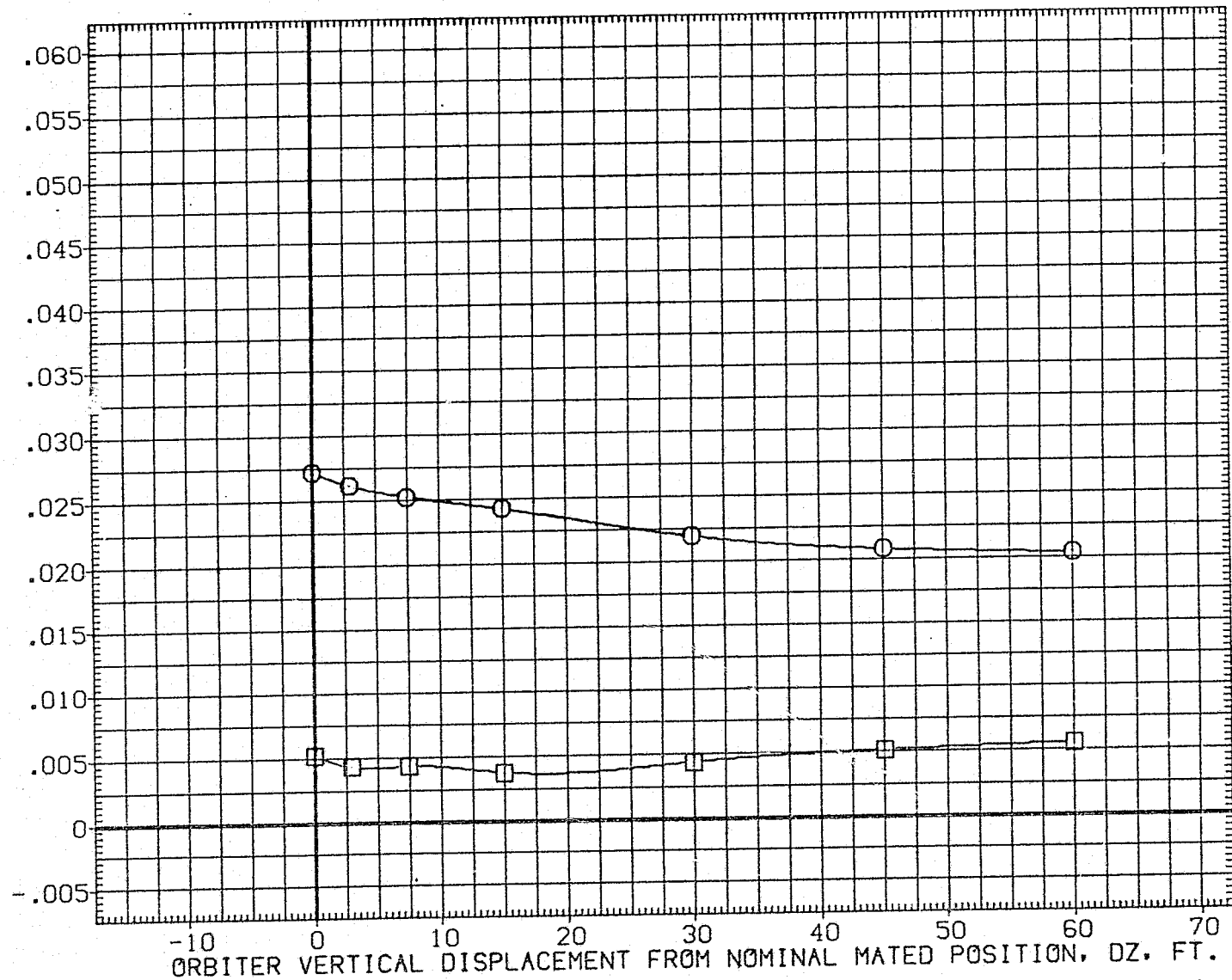


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN132)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-IB	
○	10.000		.000	.000	
□	14.000	ELV-0B	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

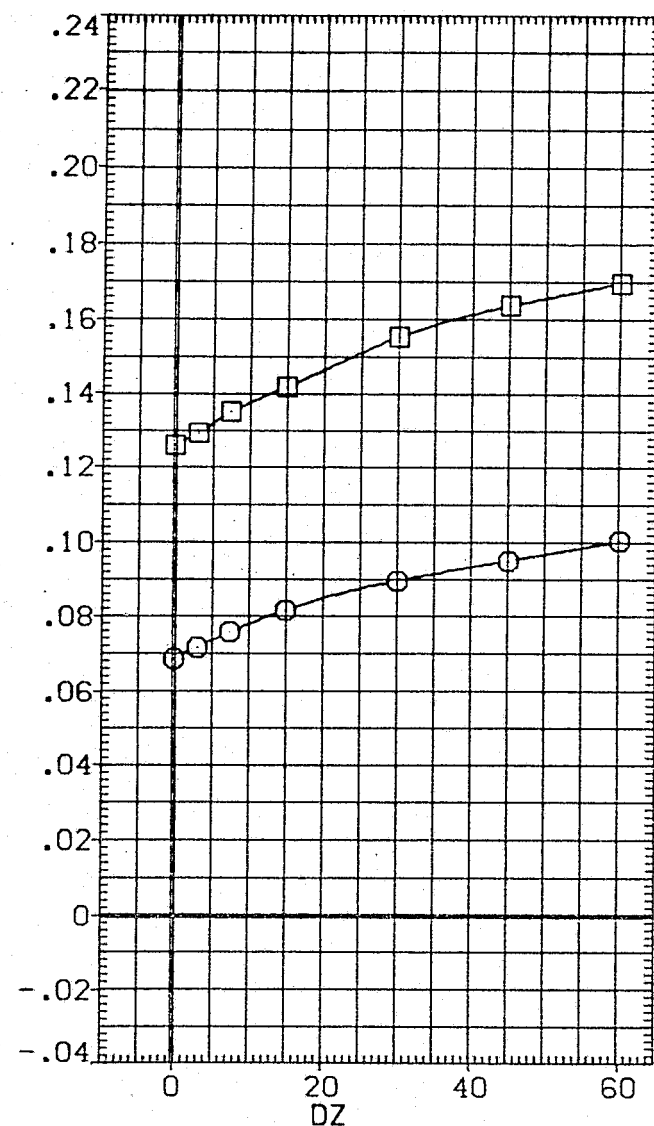
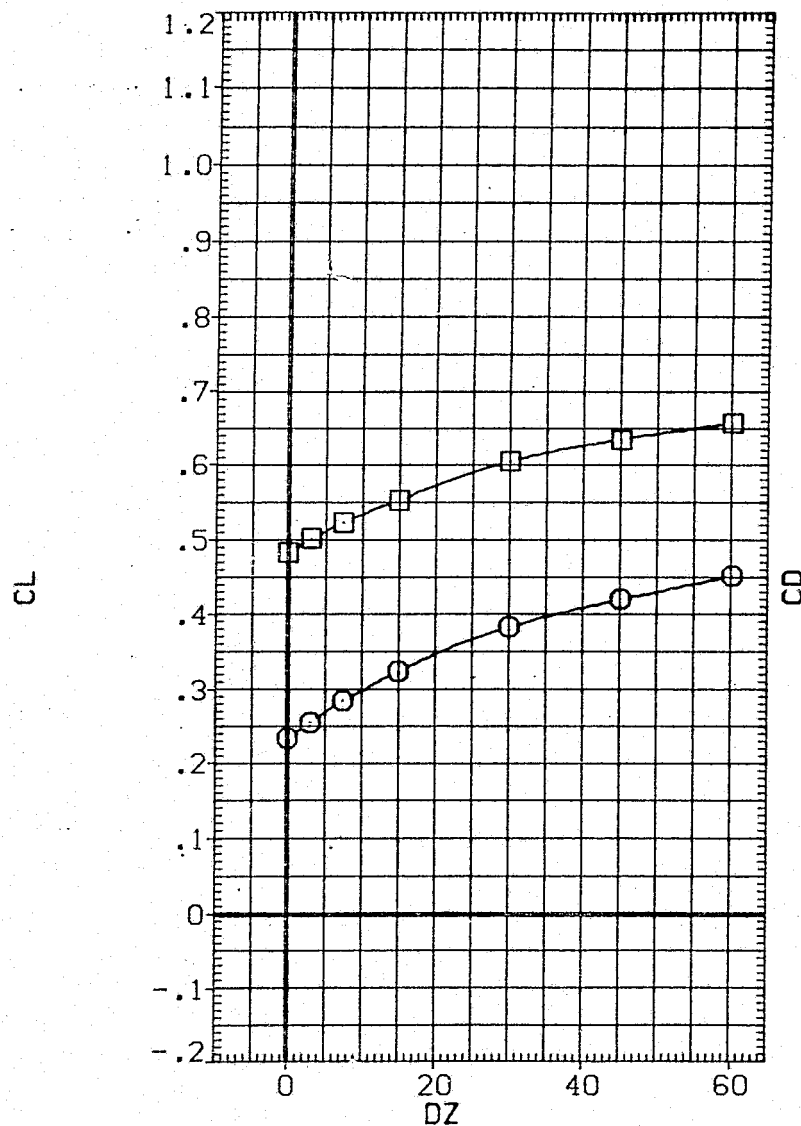


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	
○	10.000	ELV-OB	.000	ELV-IB
□	14.000	MACH	3.000	ELEVON
		PHI	.600	BETA0
		DX	.000	DY
			.000	ALPHAC
			8.000	

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

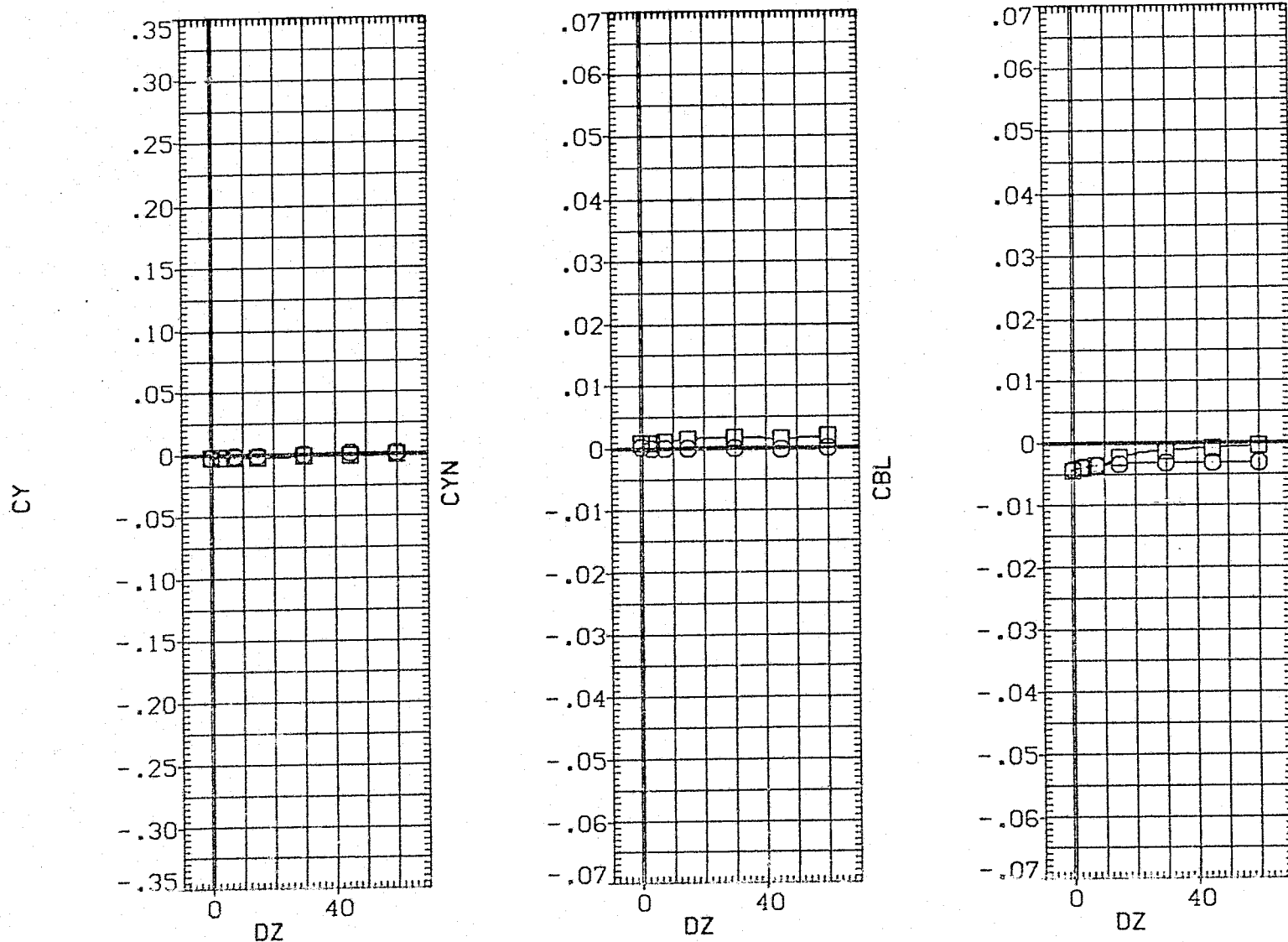


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (132 - 018)(VGN132)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-18 .000 ELV-08 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

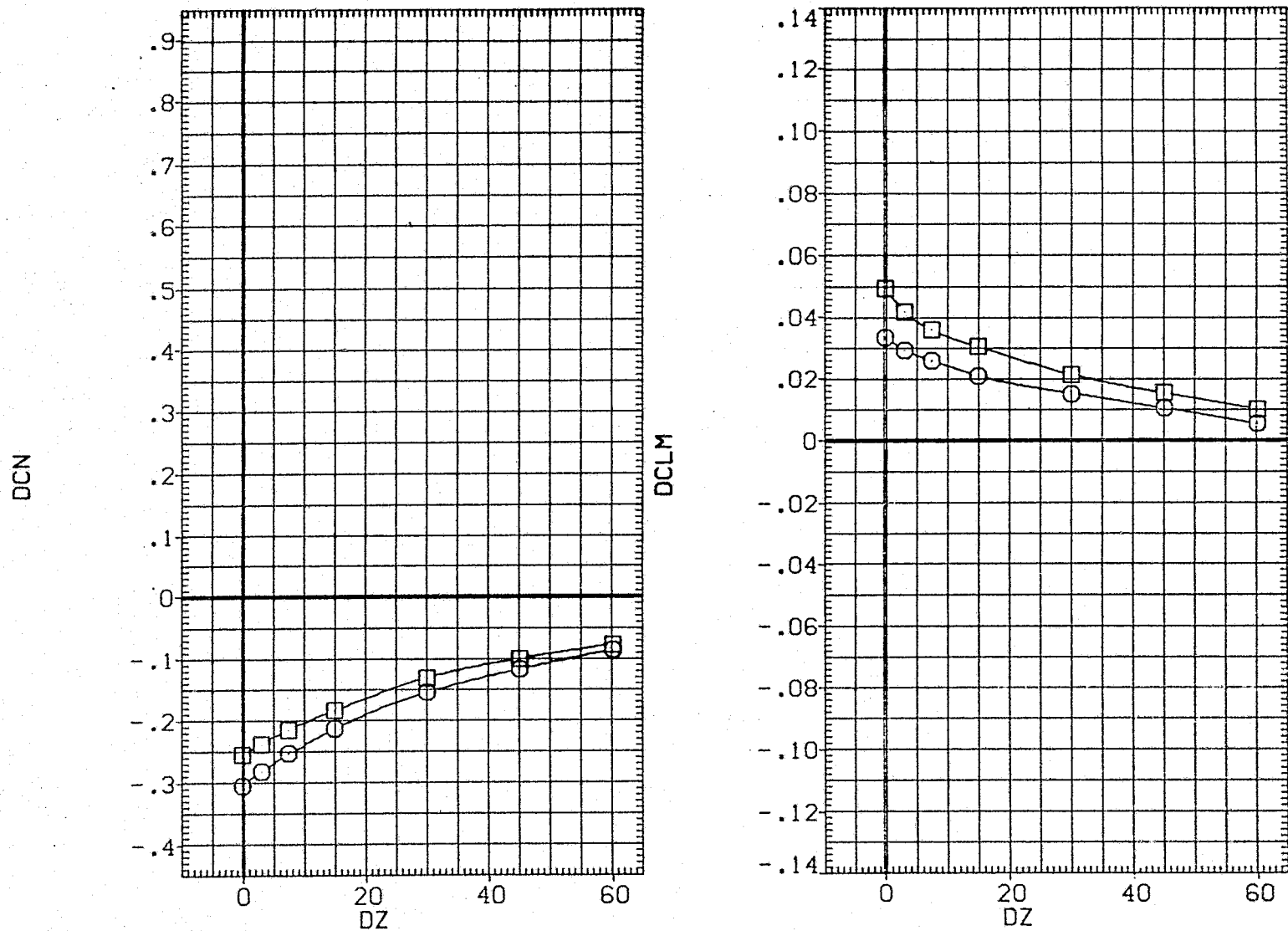


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL

○
□

ALPHA0

10.000

ALPHAC

14.000

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

.000

ELV-OB

5.000

MACH

.000

DX

.000

BETAO

.000

3.000

.600

.000

.000

REFERENCE INFORMATION

SREF 2690.0000

SQ.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

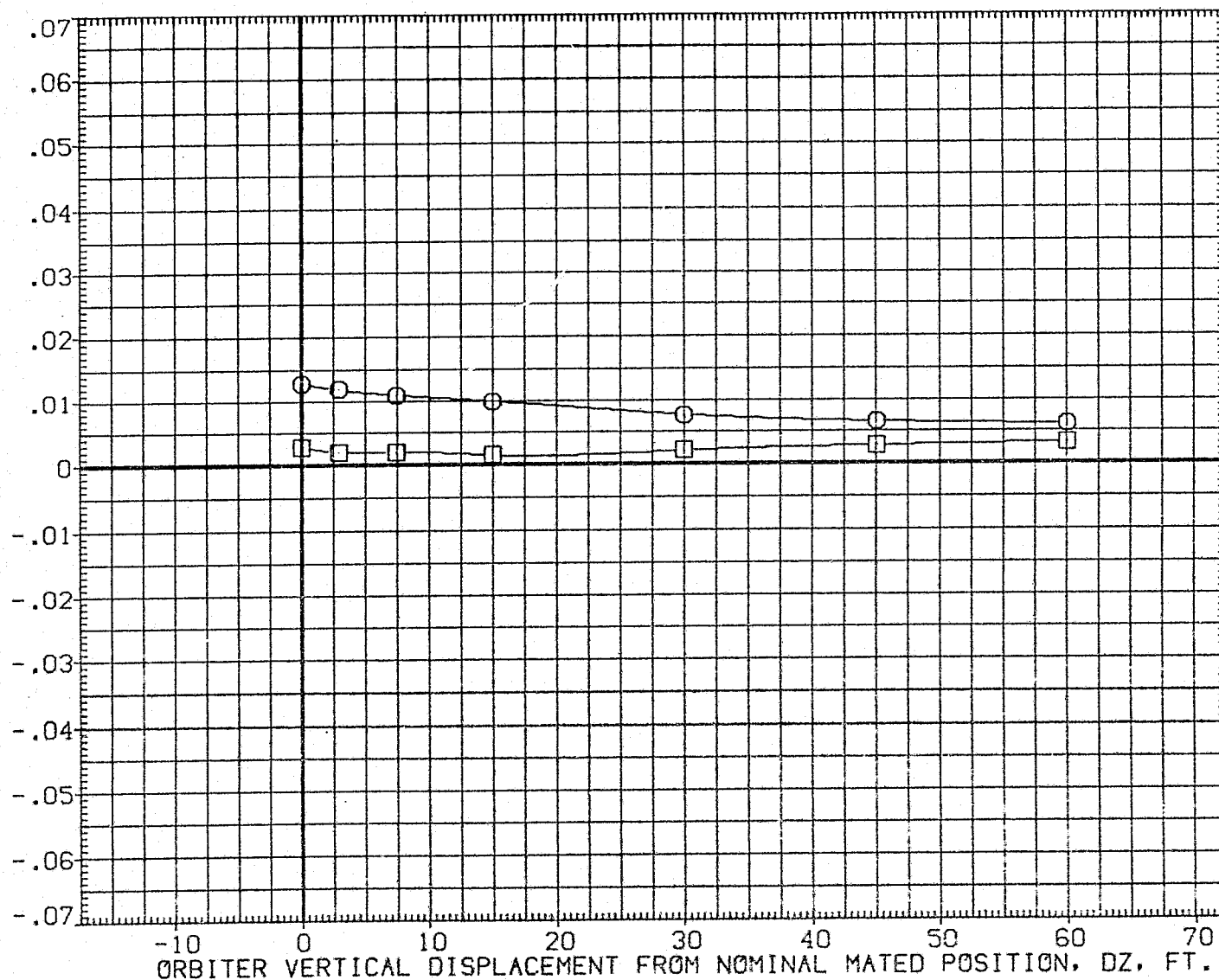


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (132 - 018) (VGN132)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-18	.000	ELV-88	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

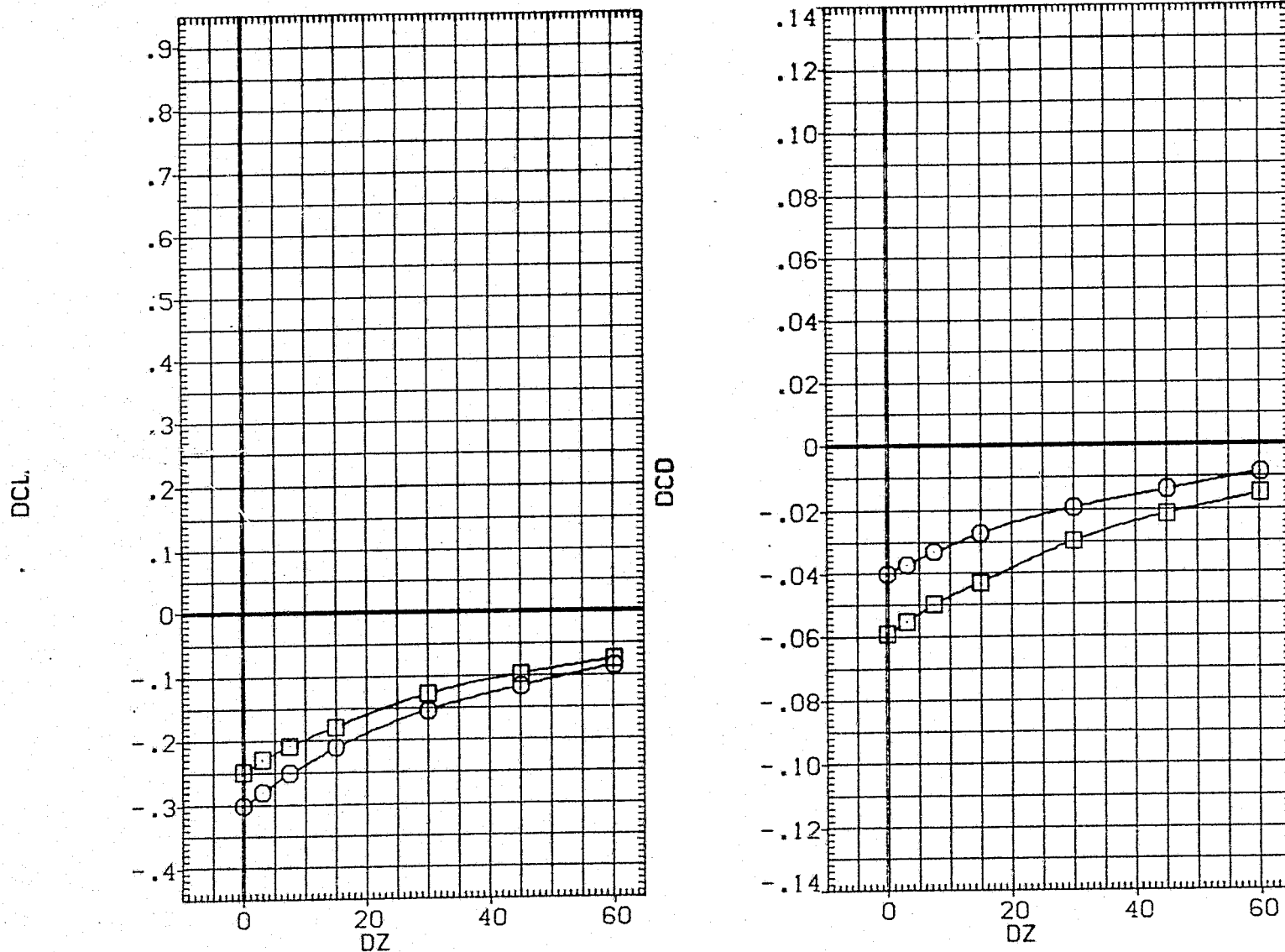


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN133)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-IB	
○	10.000	.000		.000	
□	14.000	ELV-OB	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

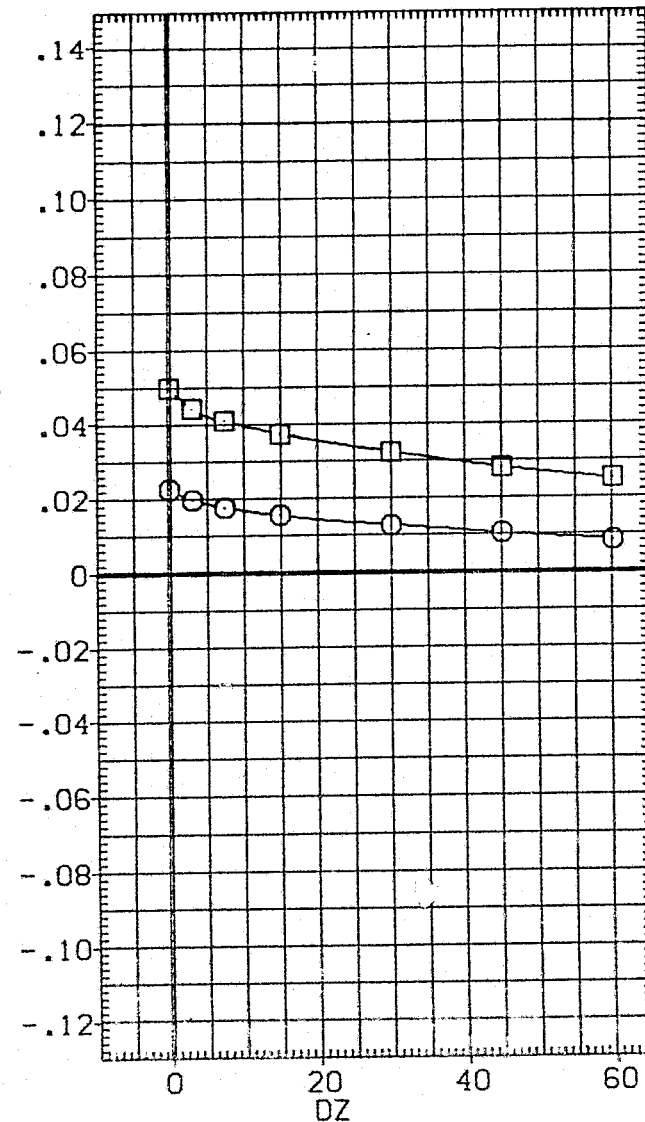
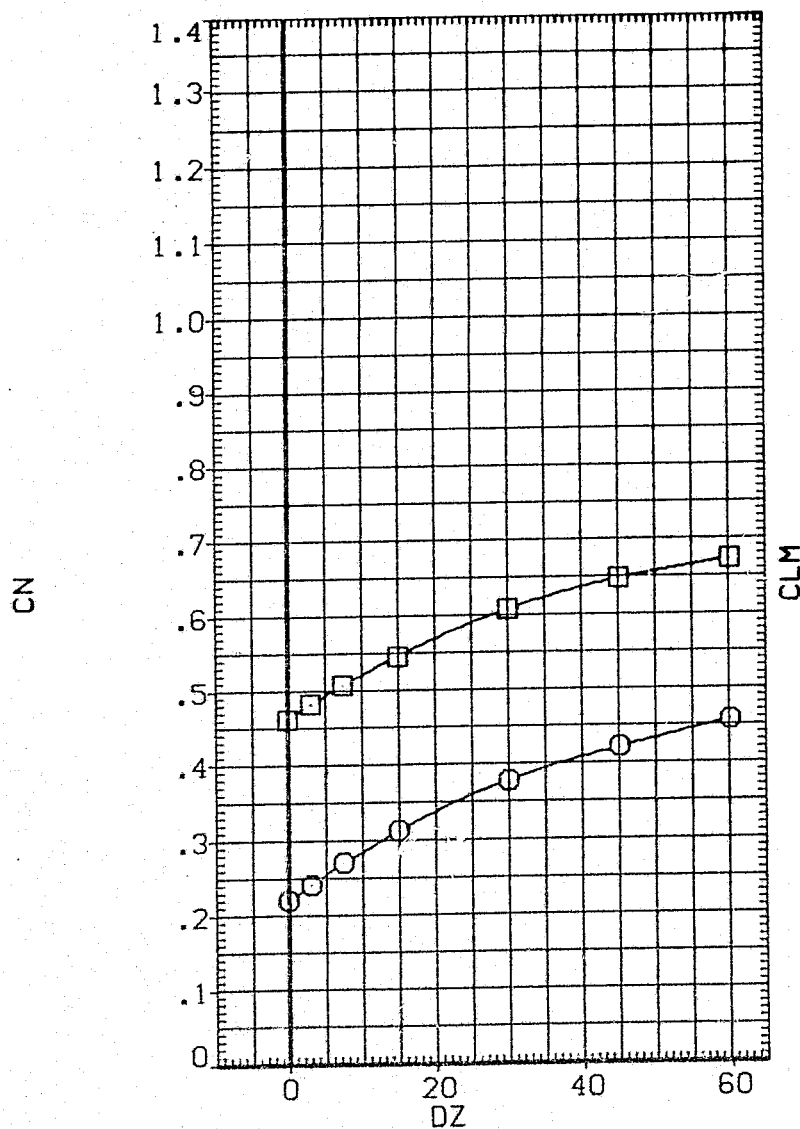


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN133)

SYMBOL		PARAMETRIC VALUES				
○	ALPHA0	10.000	BETAC	.000	ELV-1B	.000
□		14.000	ELV-0B	3.000	ELEVON	5.000
			MACH	.600	BETA0	.000
			PHI	.000	DY	.000
			DX	10.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

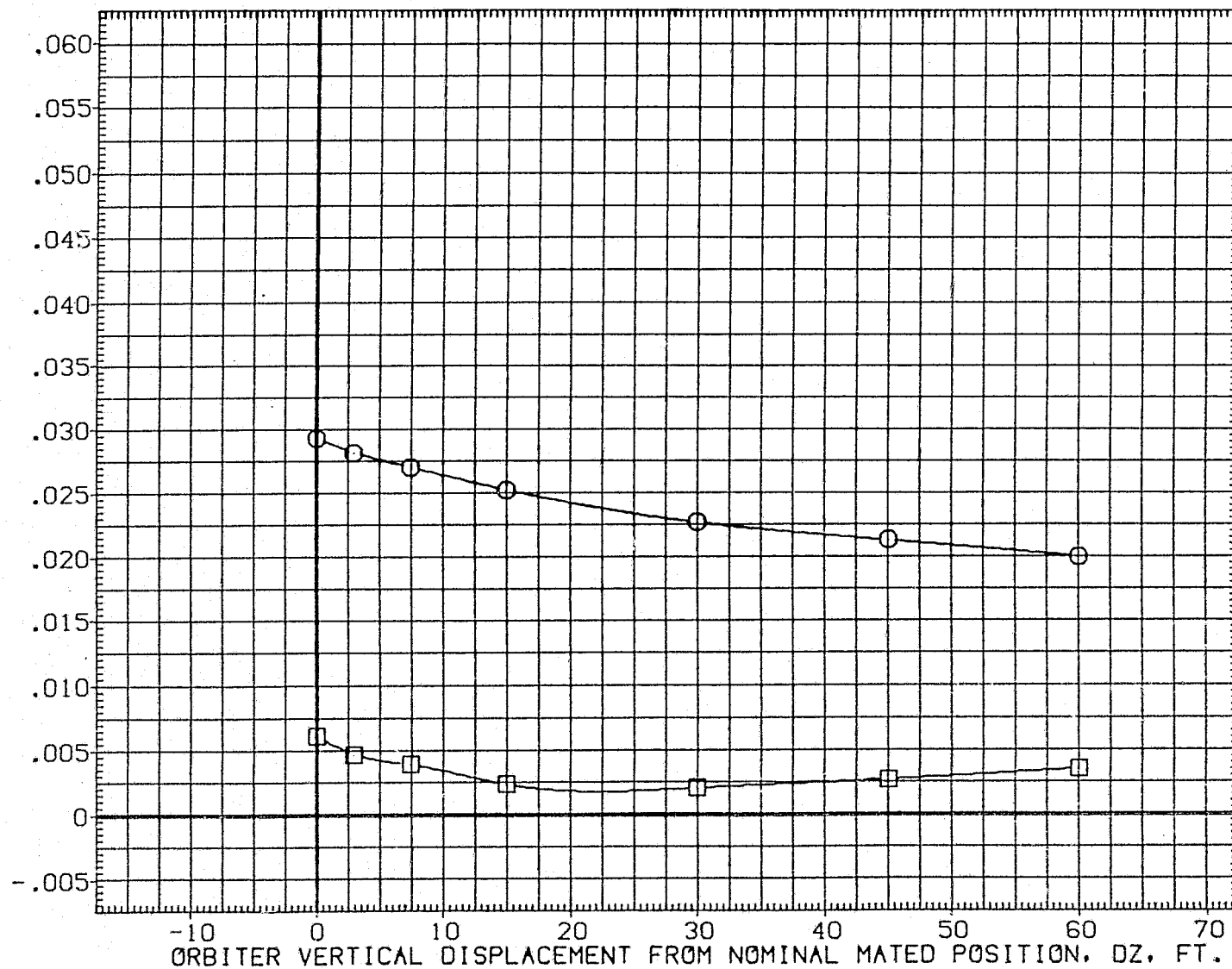


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-18	
○	10.000	.000	ELEVON	5.000	
□	14.000	3.000	BETA0	.000	
		.600	DY	.000	
		.000	ALPHAC	8.000	
		10.000			

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

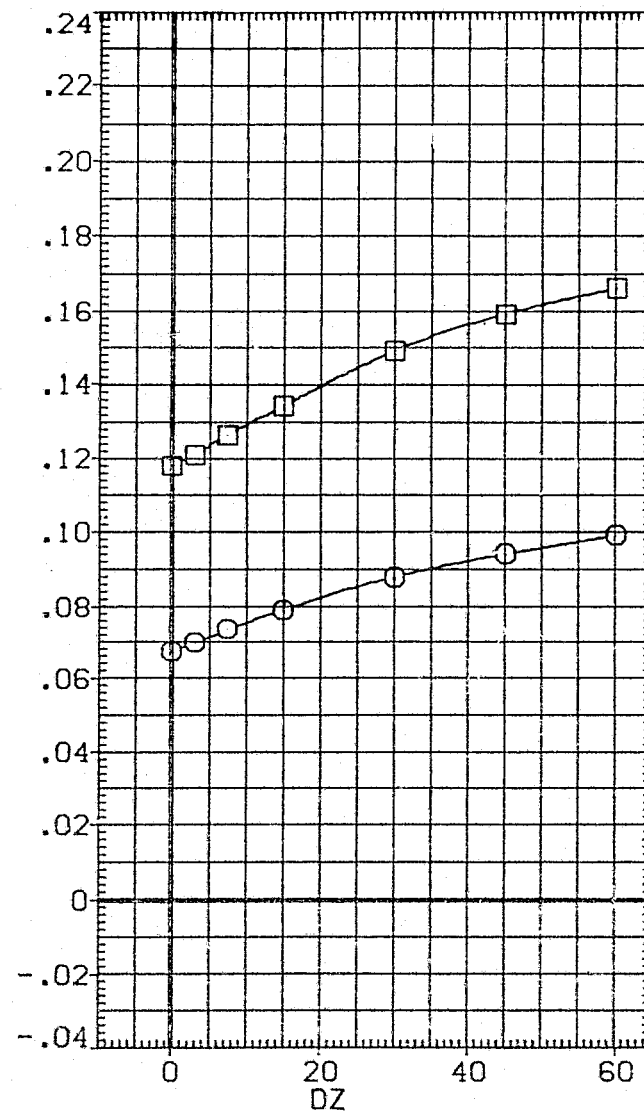
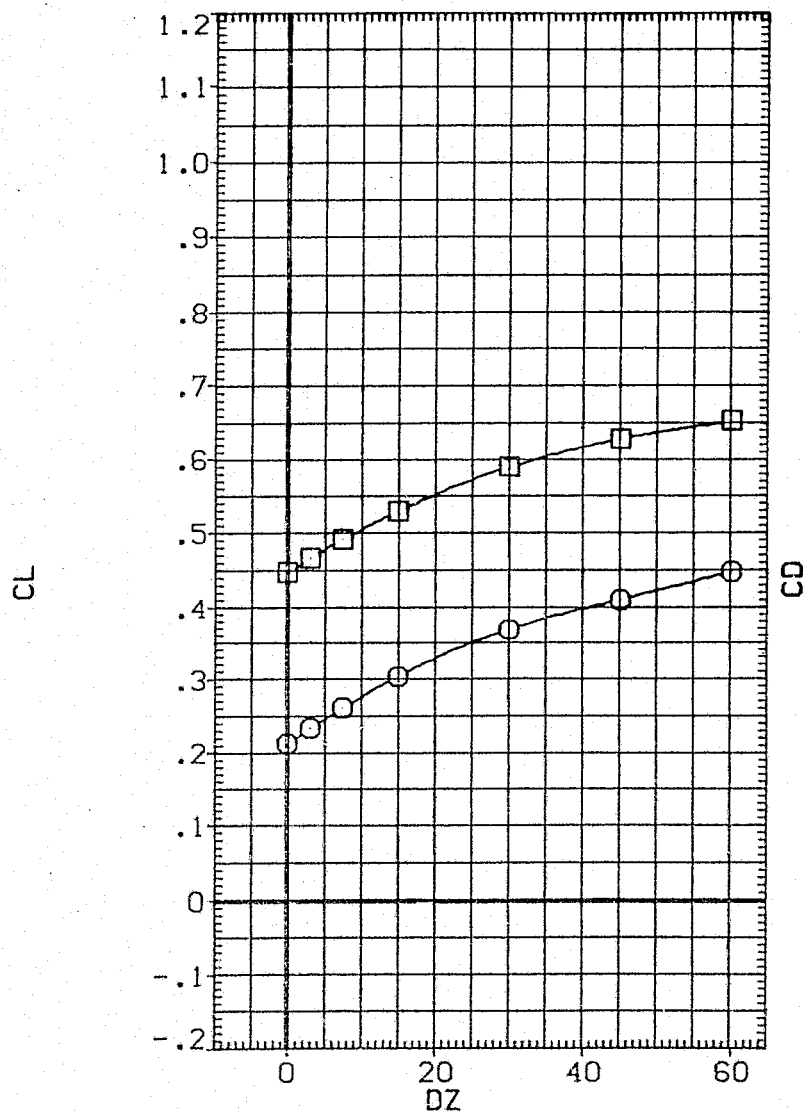


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN133)

SYMBOL

○
□

ALPHA0

10.000

14.000

BETAC

ELV-08

MACH

PHI

DX

PARAMETRIC VALUES

.000

3.000

.600

.000

10.000

ELV-18

ELEVON

BETA0

DY

ALPHAC

.000

5.000

.000

.000

8.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

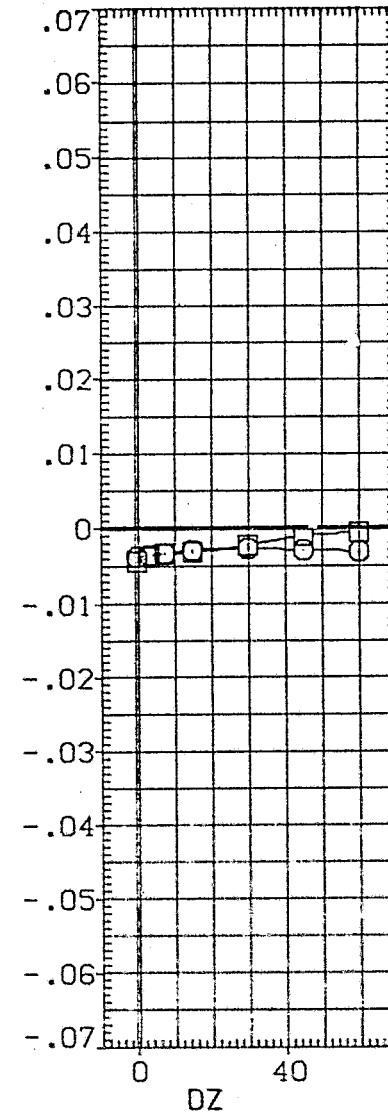
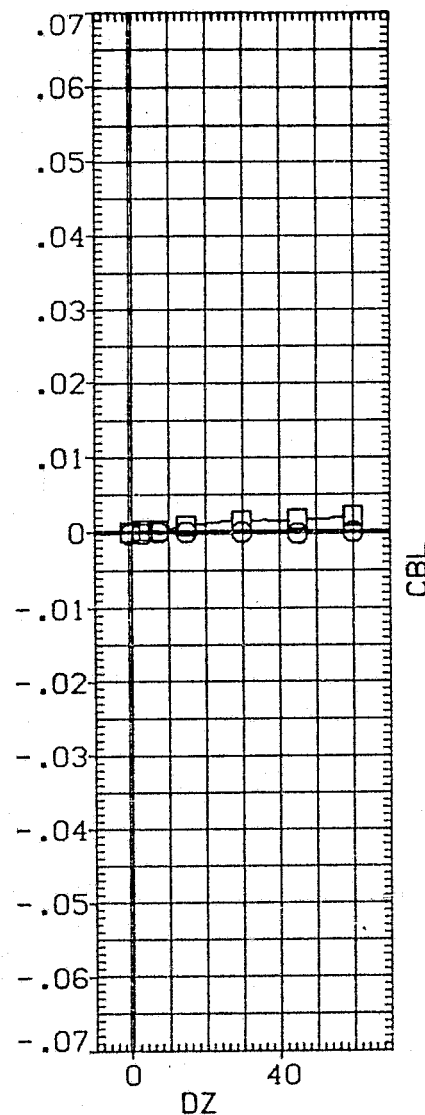
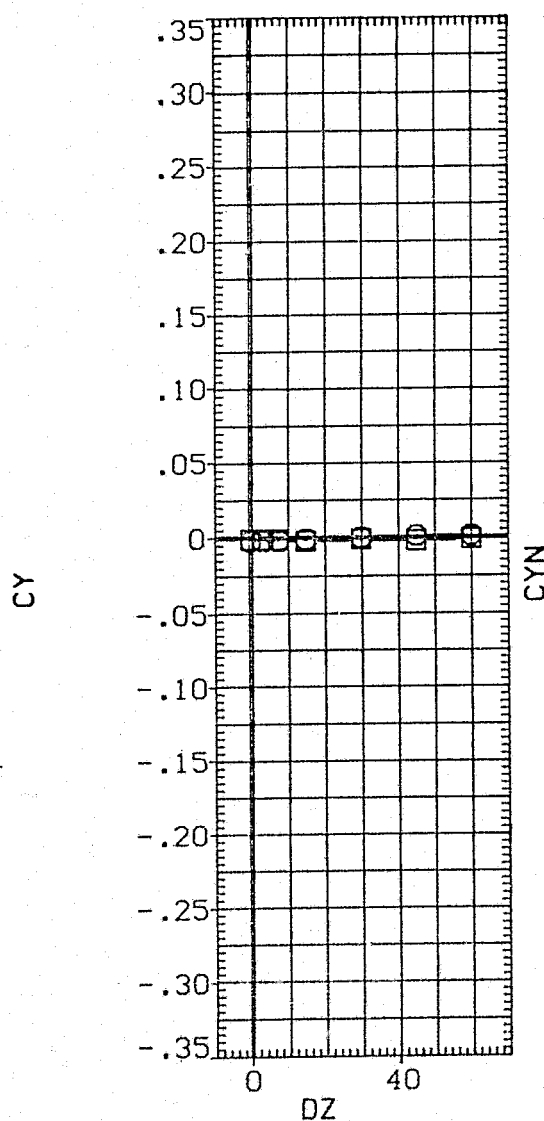


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 10.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

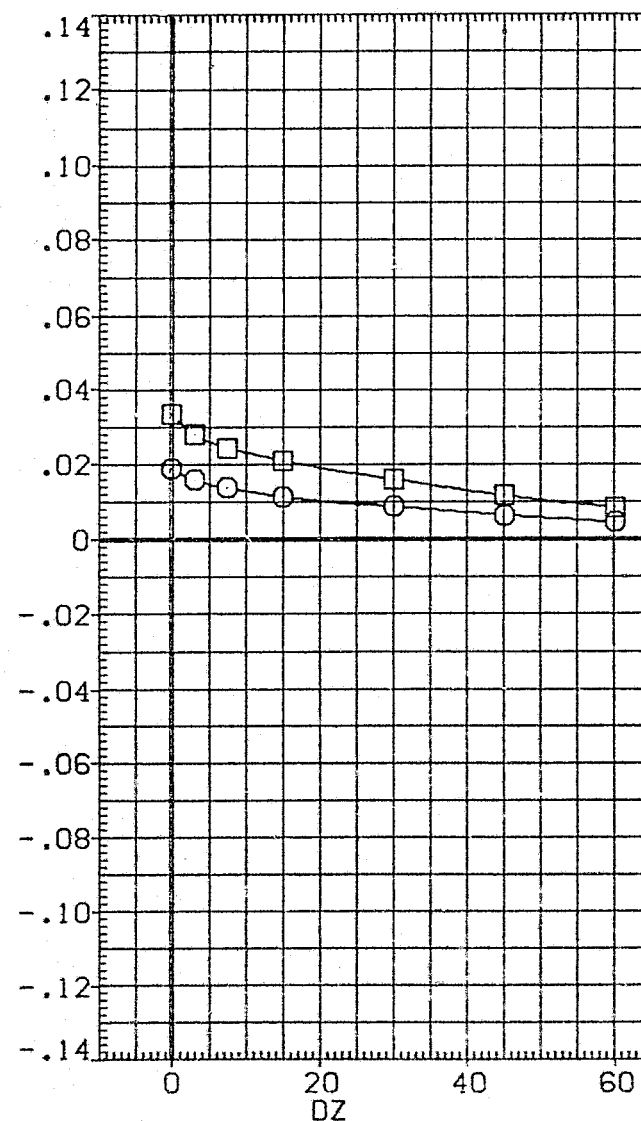
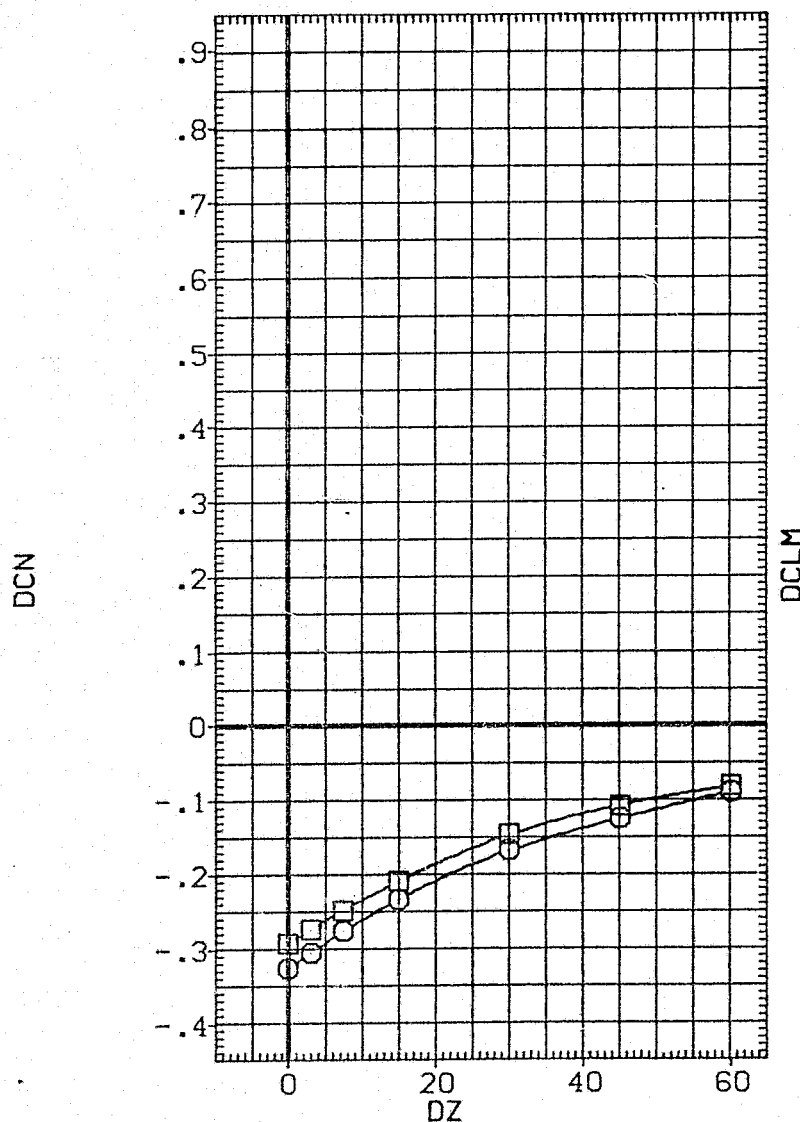


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (133 - 018)(VGN133)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

.000

ELV-0B

3.000

5.000

MACH

.600

DX

10.000

BETA0

.000

REFERENCE INFORMATION

SREF 2690.0000

50.FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN.X0

YMRP .0000

IN.Y0

ZMRP 375.0000

IN.Z0

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

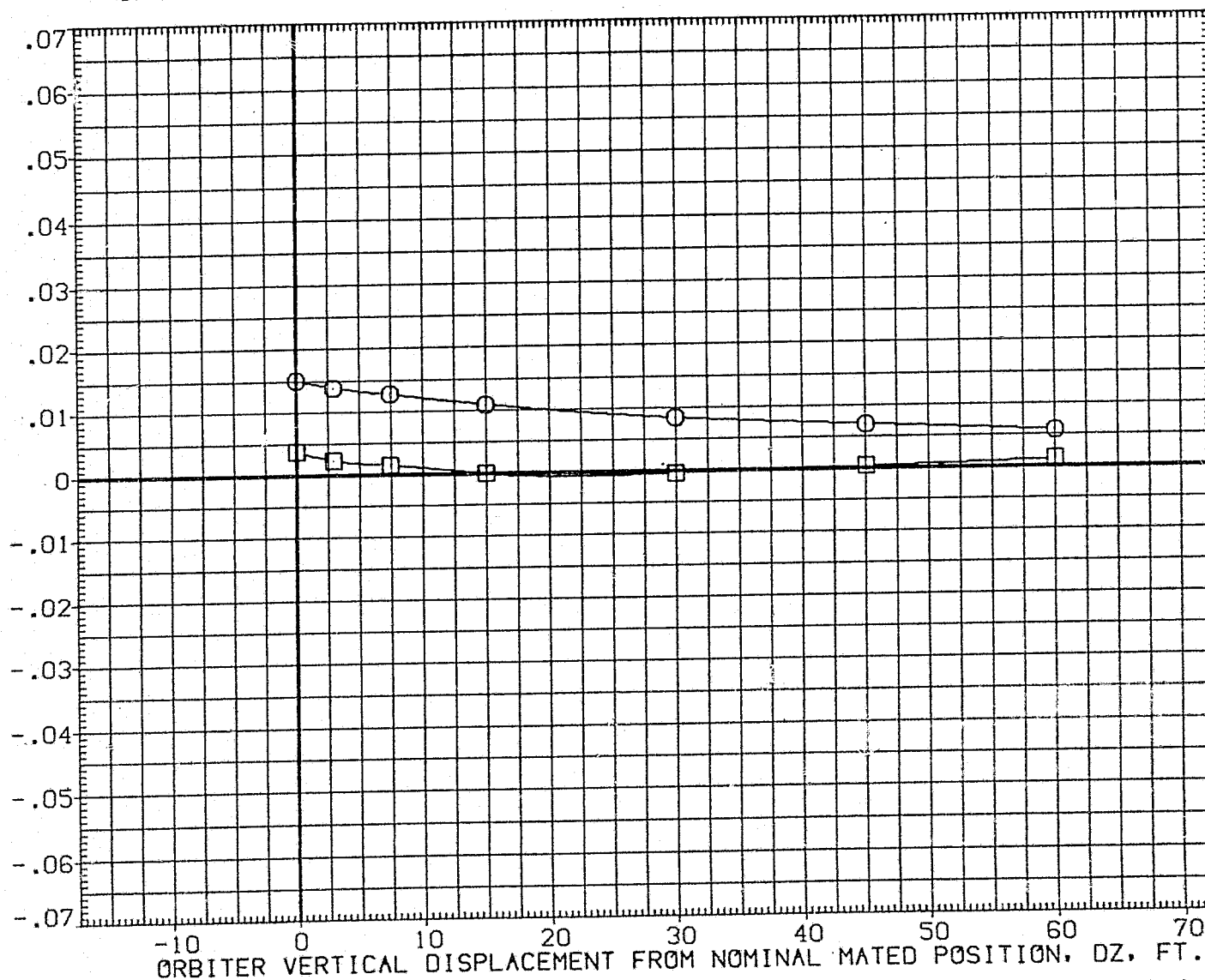


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (133 - 018)(VGN133)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

.000

BETAC

ELV-OB

MACH

DX

BETA0

.000

3.000

.600

10.000

.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

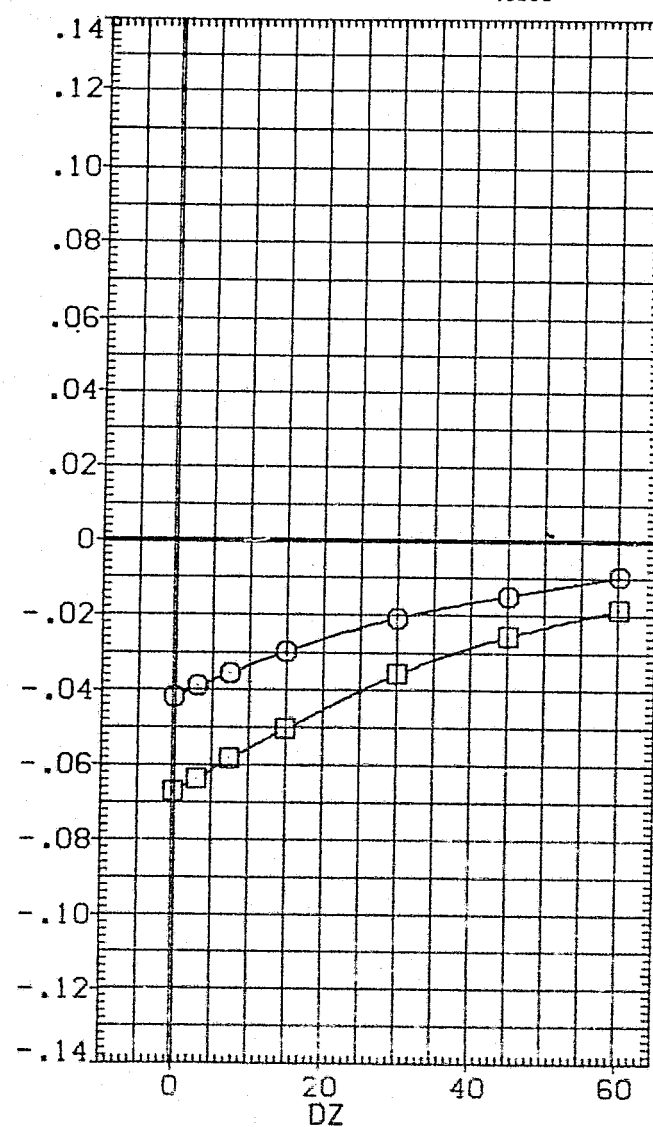
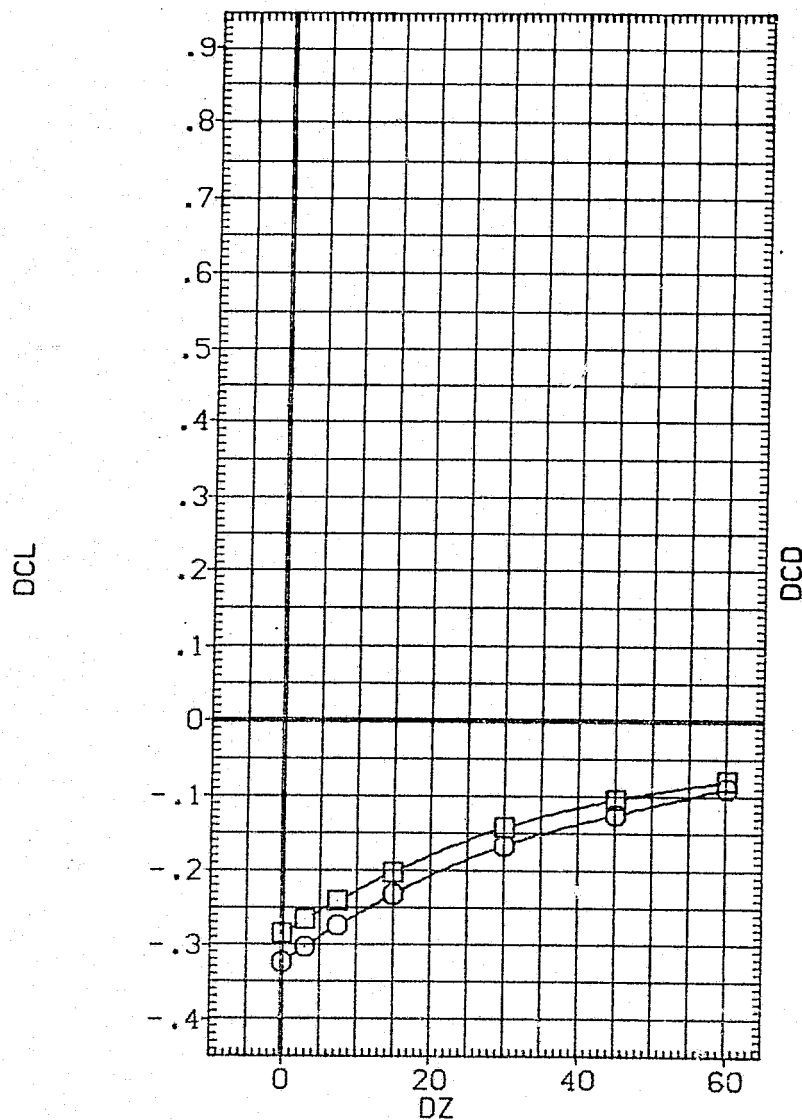


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN134)

SYMBOL	ALPHAD		PARAMETRIC VALUES			
	10.000	BETAC	.000	ELV-18	.000	
○	14.000	ELV-08	3.000	ELEVON	5.000	
□		MACH	.600	BETAO	.000	
		PHI	.000	DY	.000	
		DX	20.000	ALPHAC	8.000	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMPP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

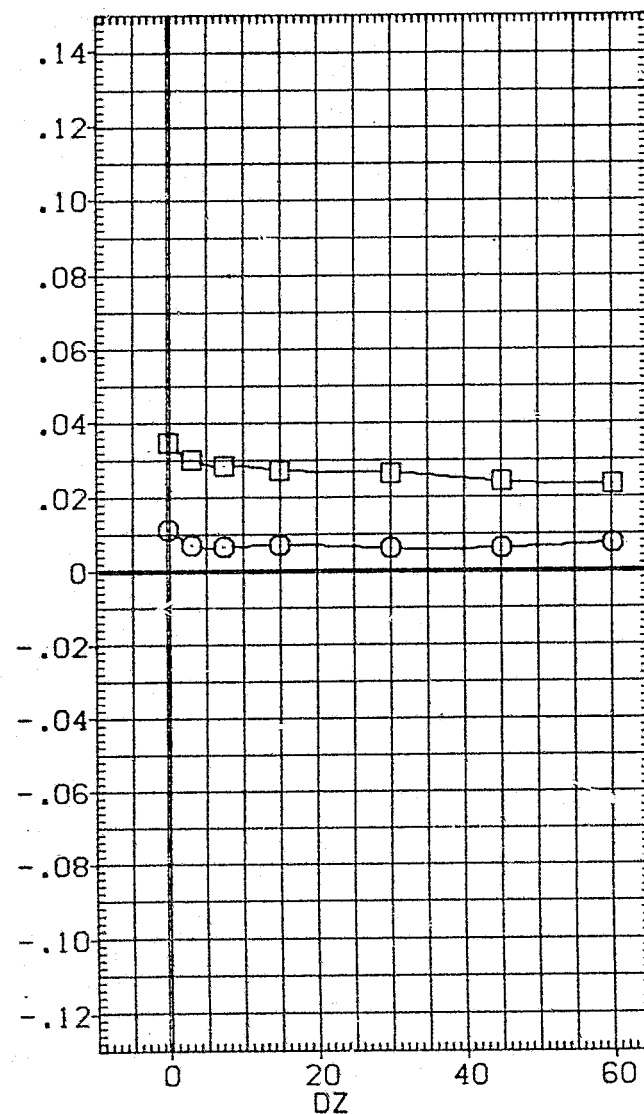
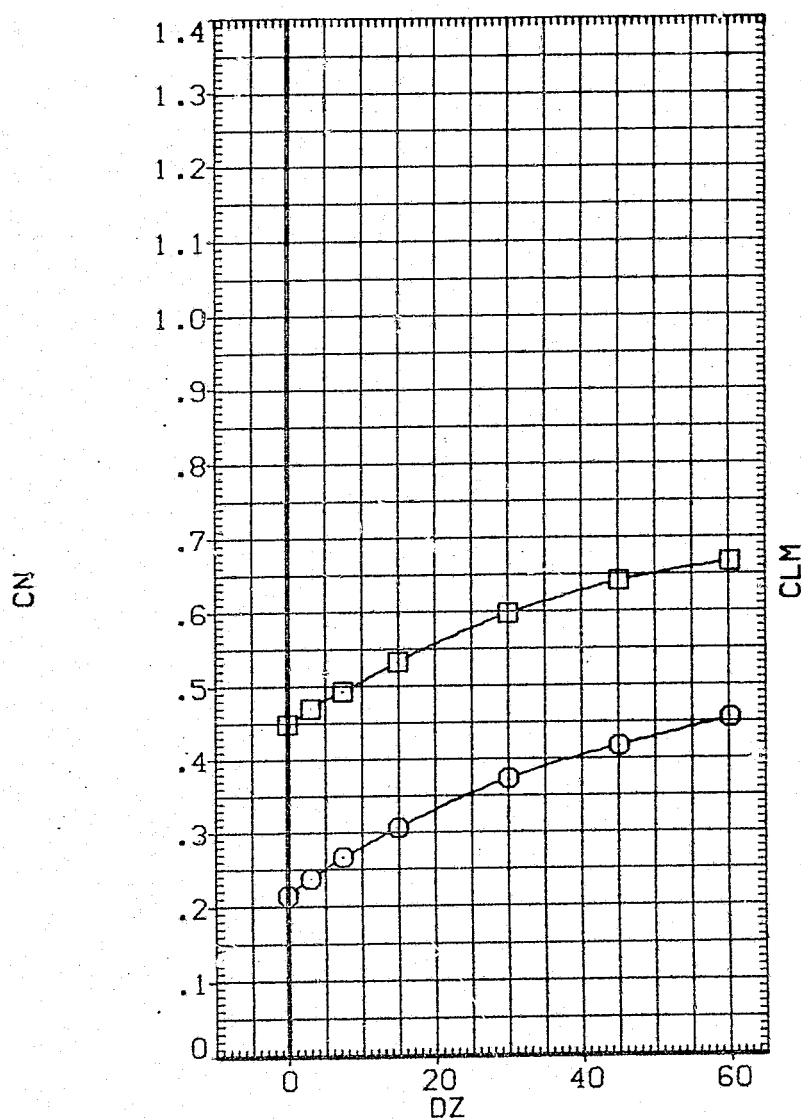


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	BETAC	.000	ELV-1B	.000
□	14.000	ELV-0B	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	20.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

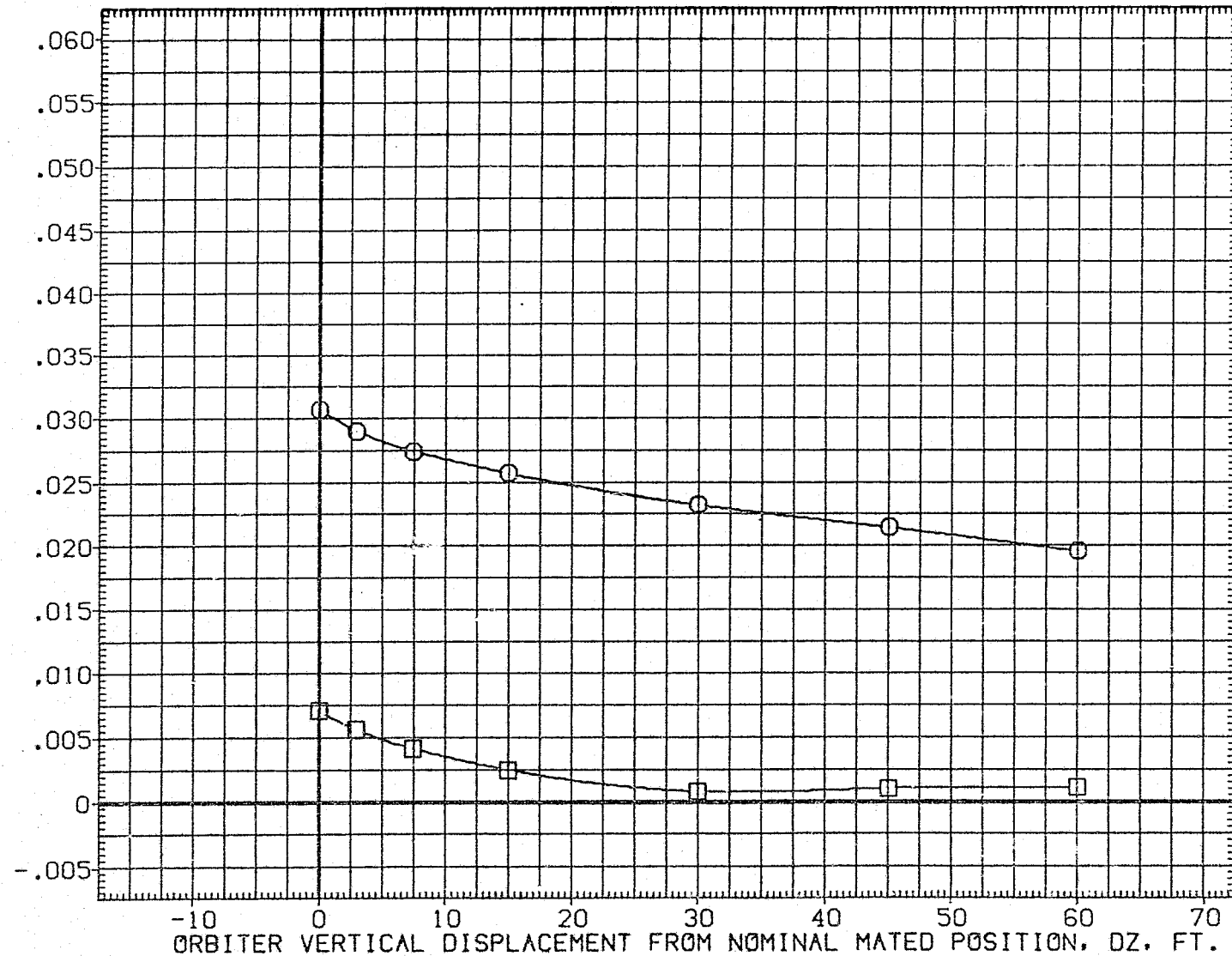


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA(NGN134)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	BETAC	.000	ELV-1B	.000
□	14.000	ELV-0B	3.000	ELEVON	5.000
		MACH	.600	BETA0	.000
		PHI	.000	DY	.000
		DX	20.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

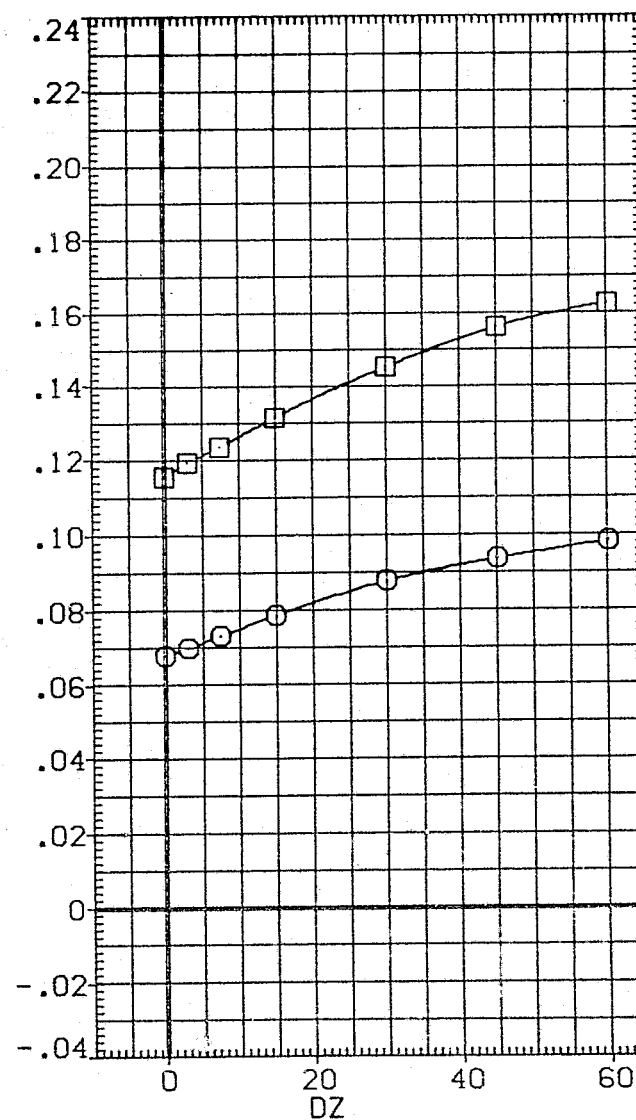
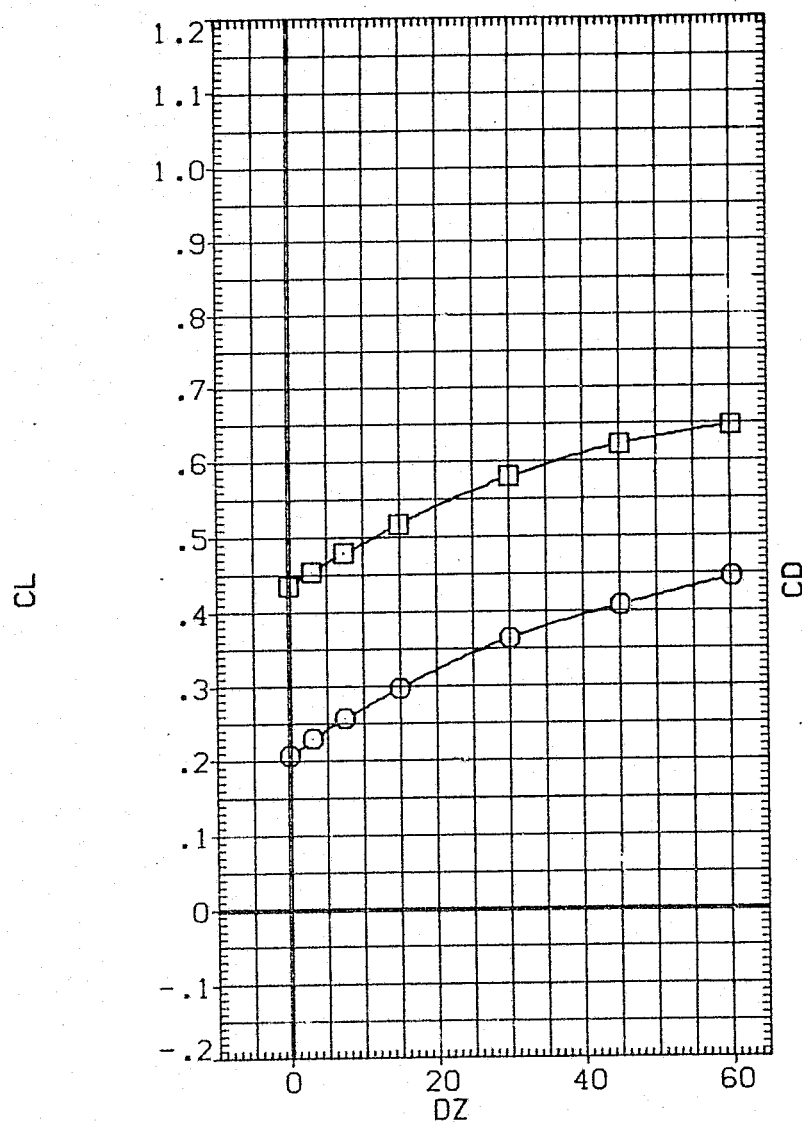


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	BETAC	PARAMETRIC VALUES	ELV-18	
○	10.000	ELV-08	.000	5.000	
□	14.000	MACH	3.000	.000	
		PHI	.000	DY	.000
		DX	20.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.8600	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

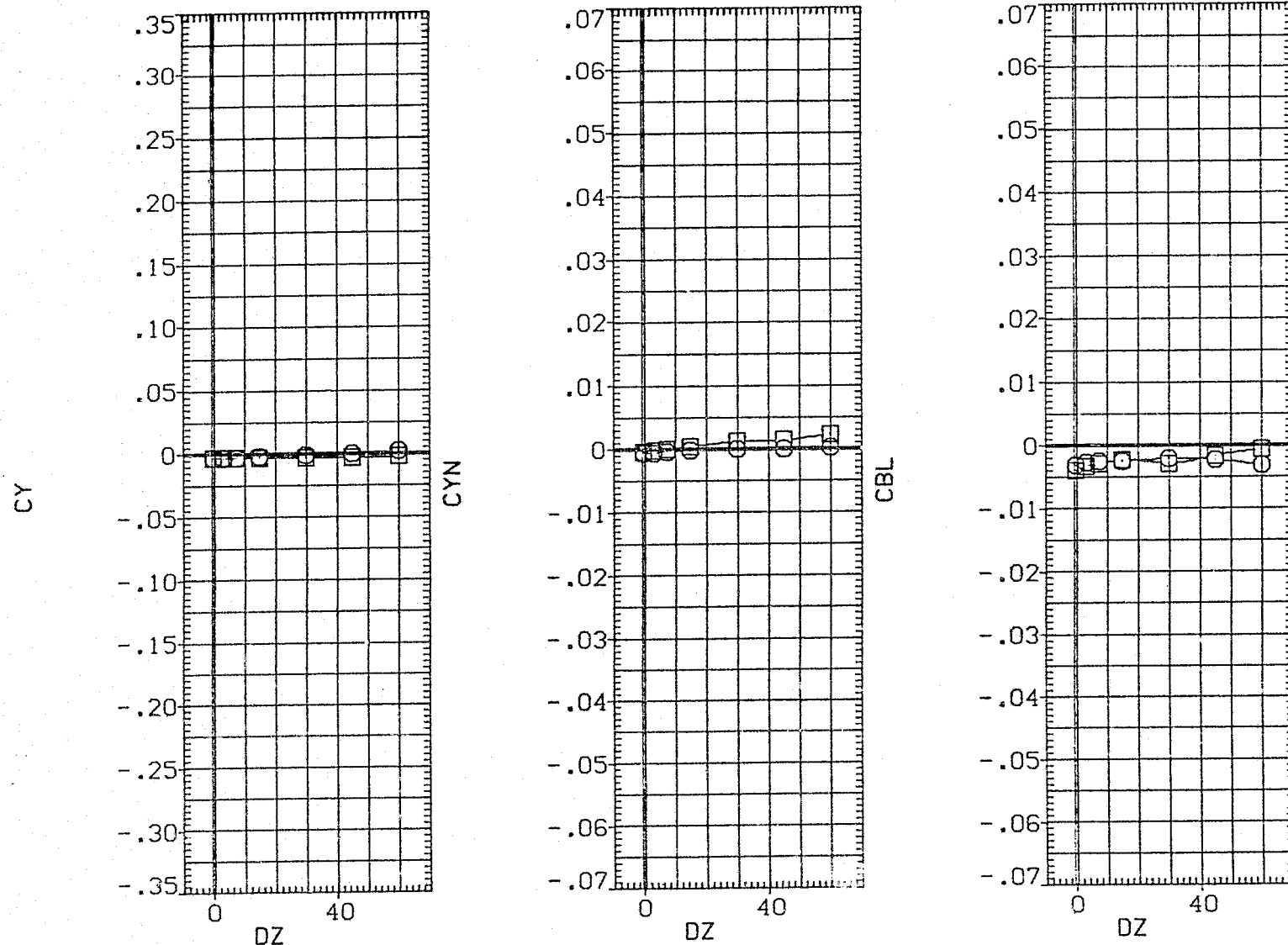


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (134 - 018)(VGN134)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-IB .000 ELV-OB 3.000
		ELEVON 5.000 MACH .600
		PHI .000 DX 20.000
		DY .000 BETA0 .000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

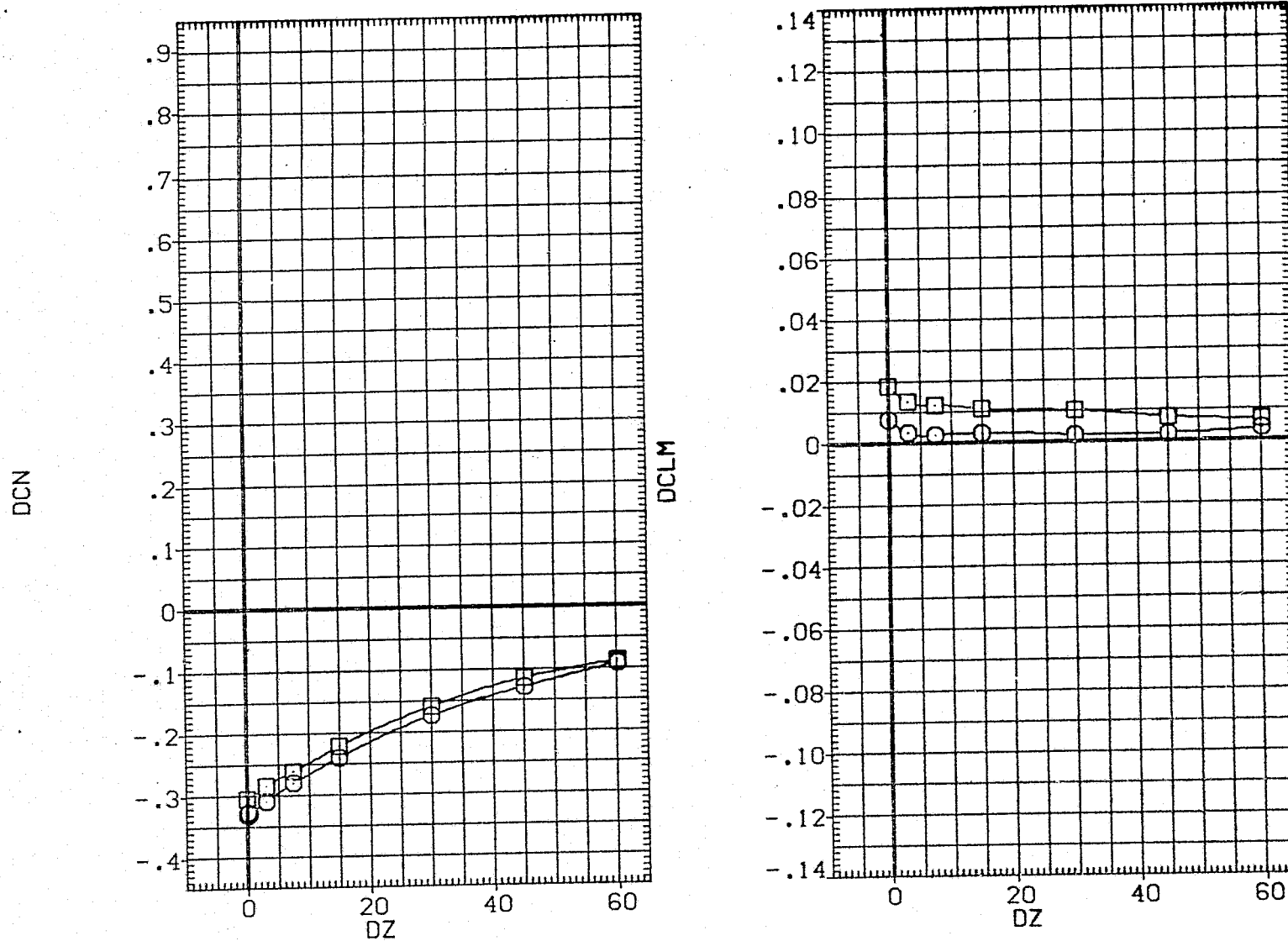


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

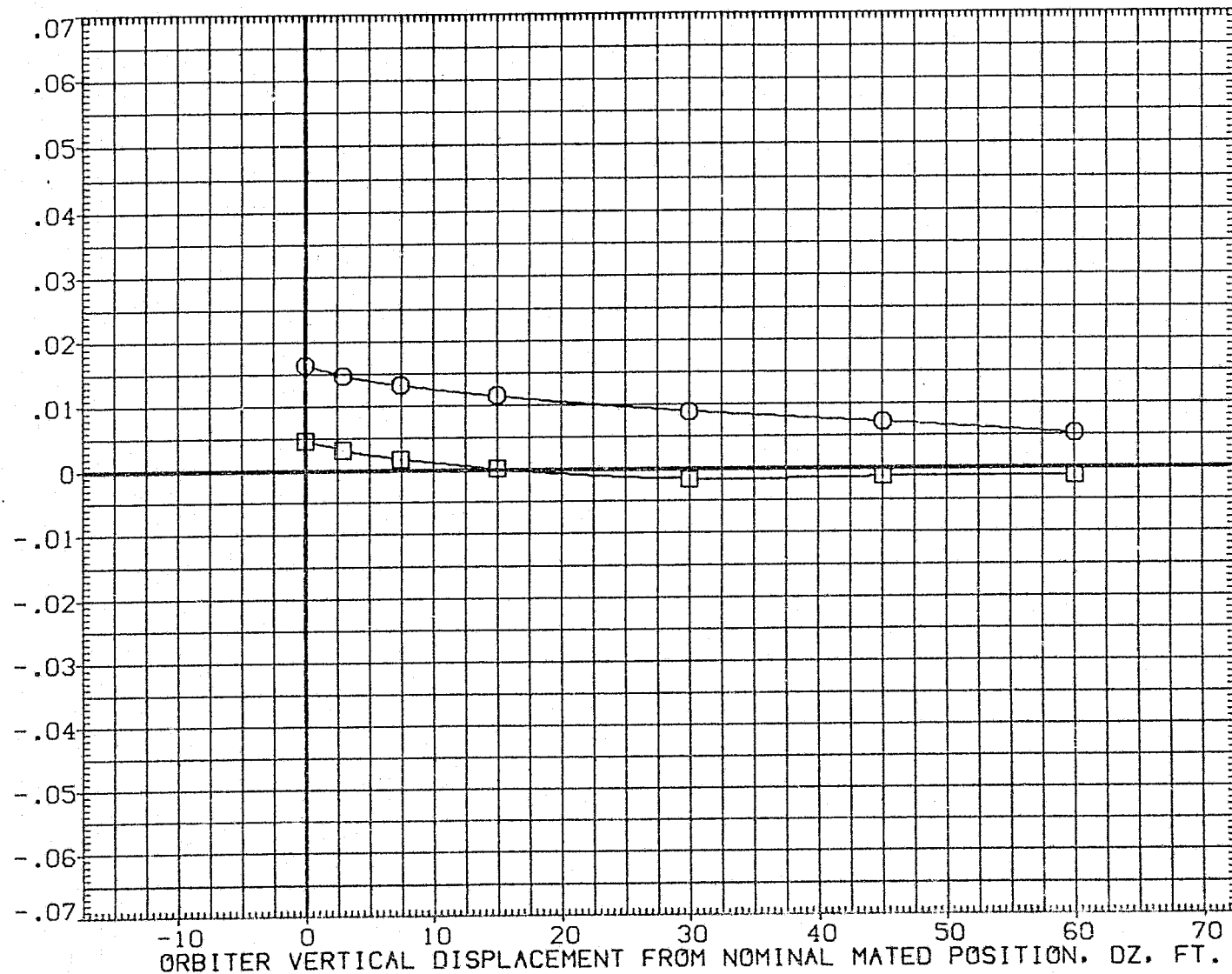


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (134 - 018) (VGN134)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	.000
□	14.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	20.000
		DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

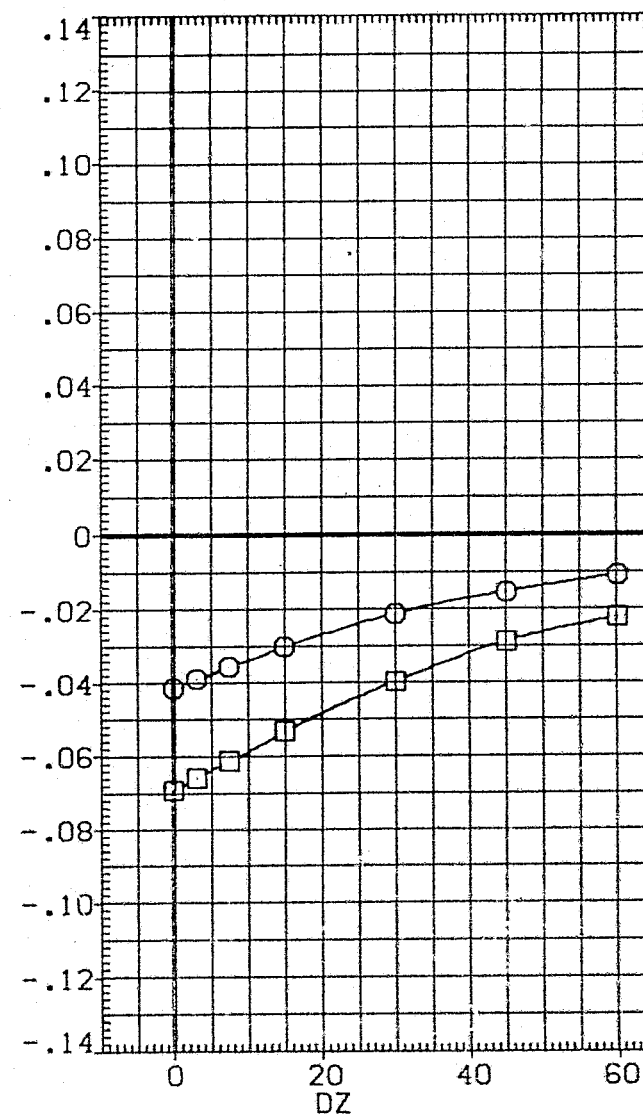
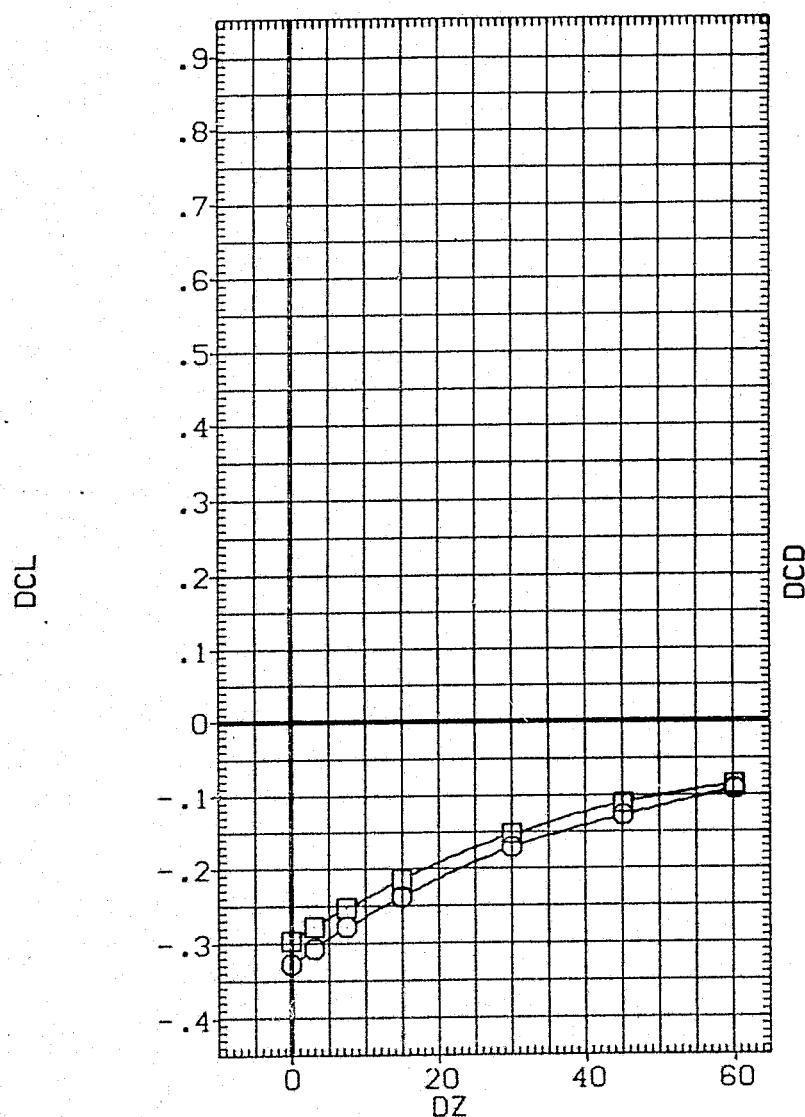


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0300	IN.X0
YMRP	.0300	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

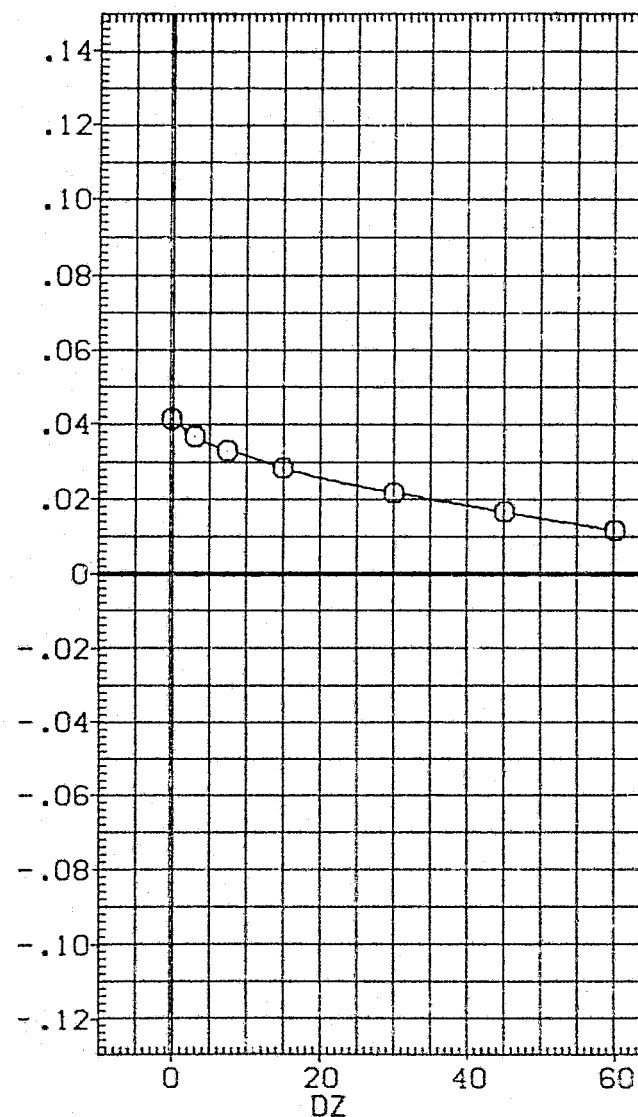
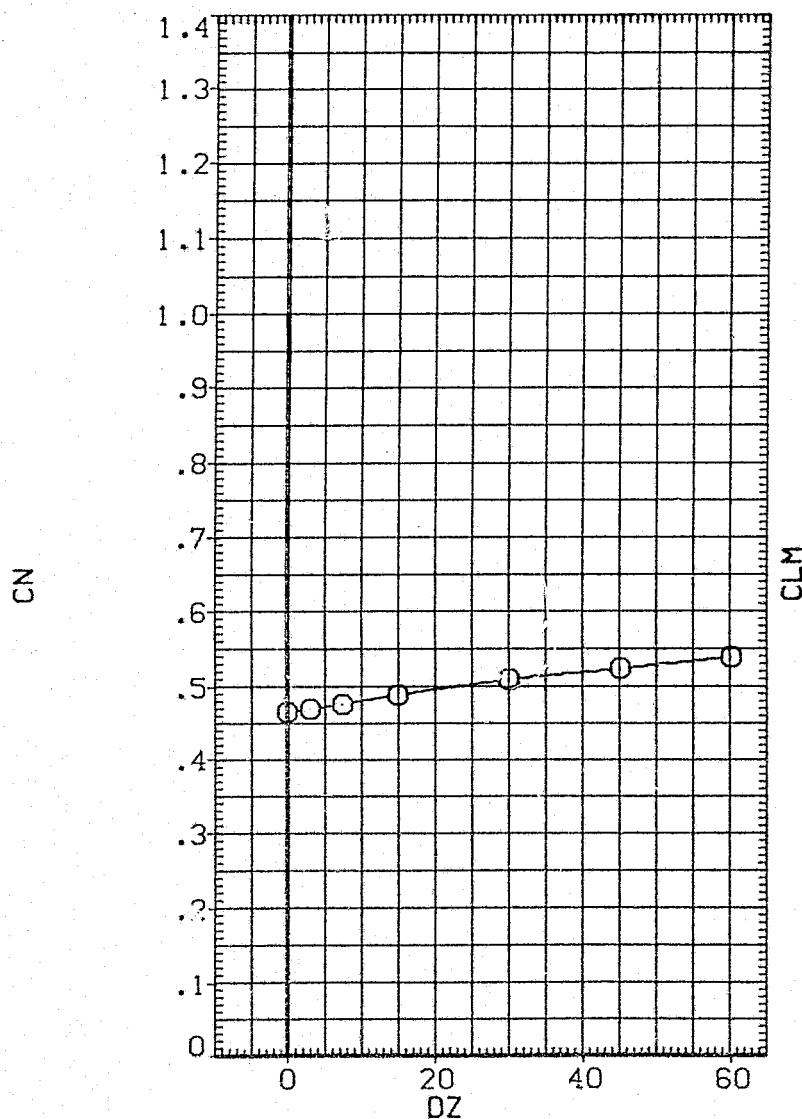


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN137)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETAD	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

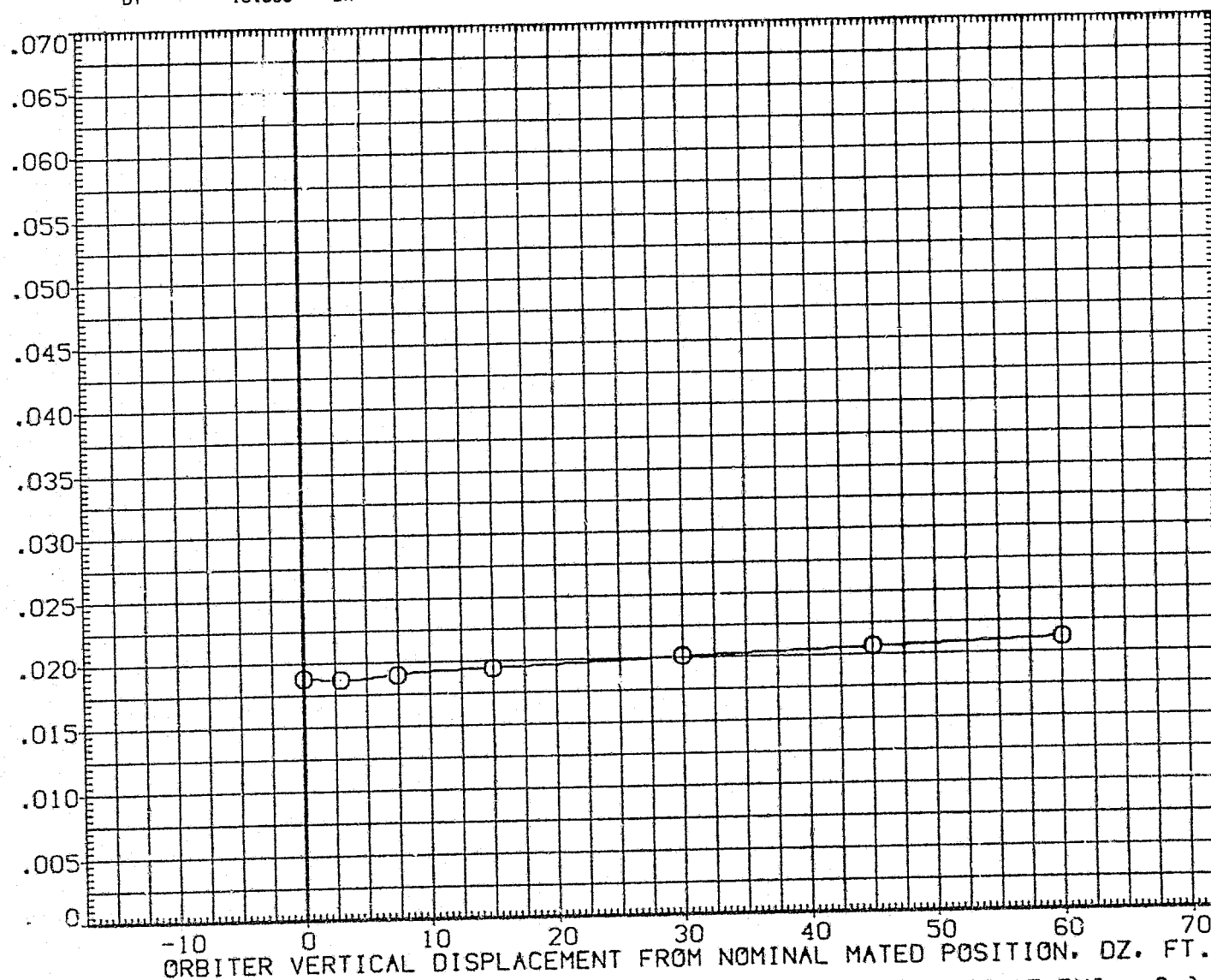


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN137)

SYMBOL		PARAMETRIC VALUES			
○	ALPHA0	ALPHAC	4.000	BETAC	.000
	10.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

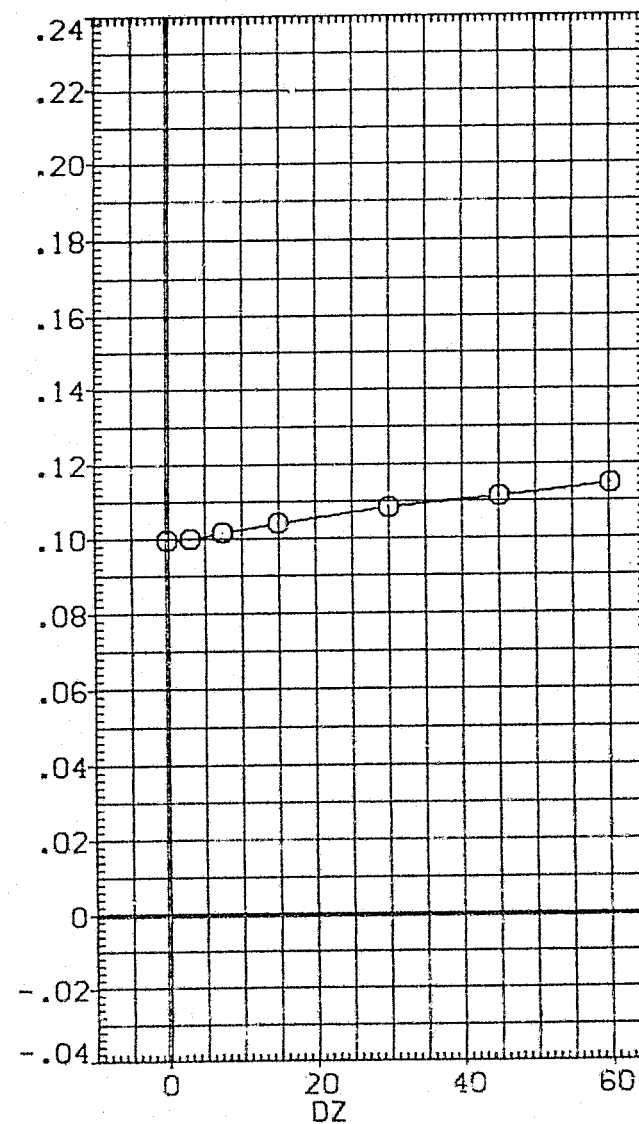
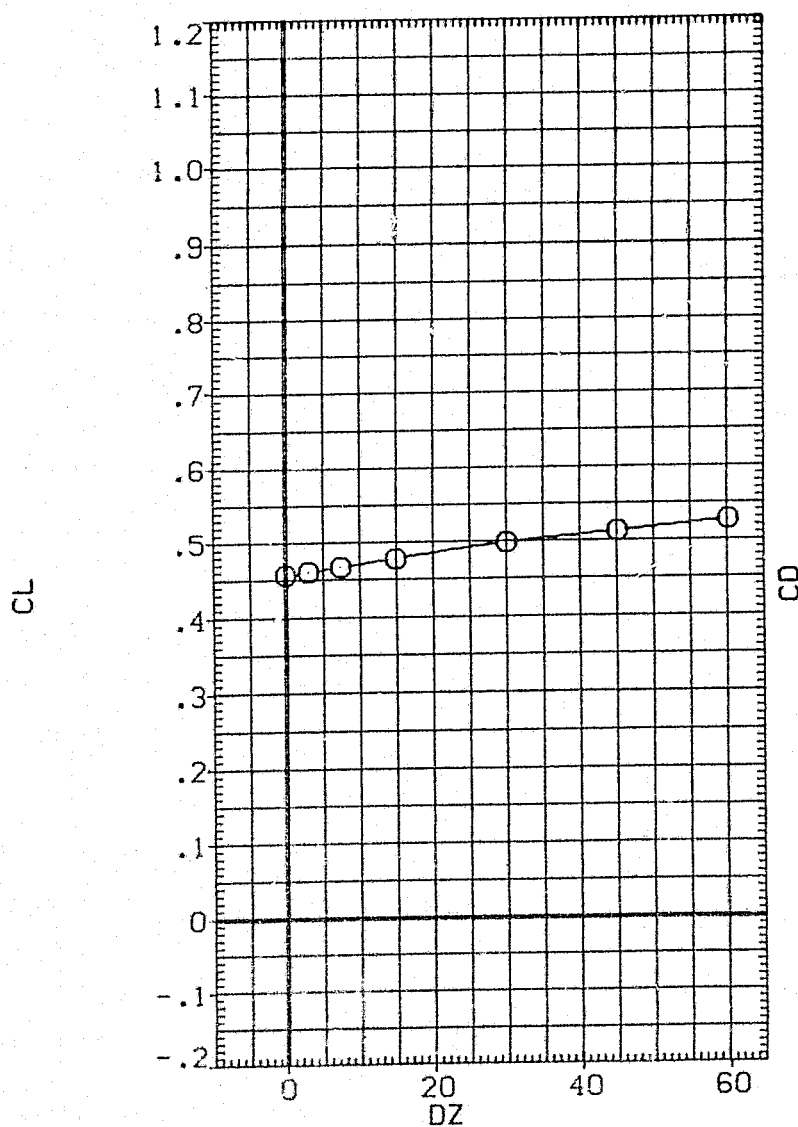
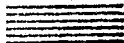


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)



CA20 747/1 02 S1

ORBITER DATA (NGN137)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	535.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

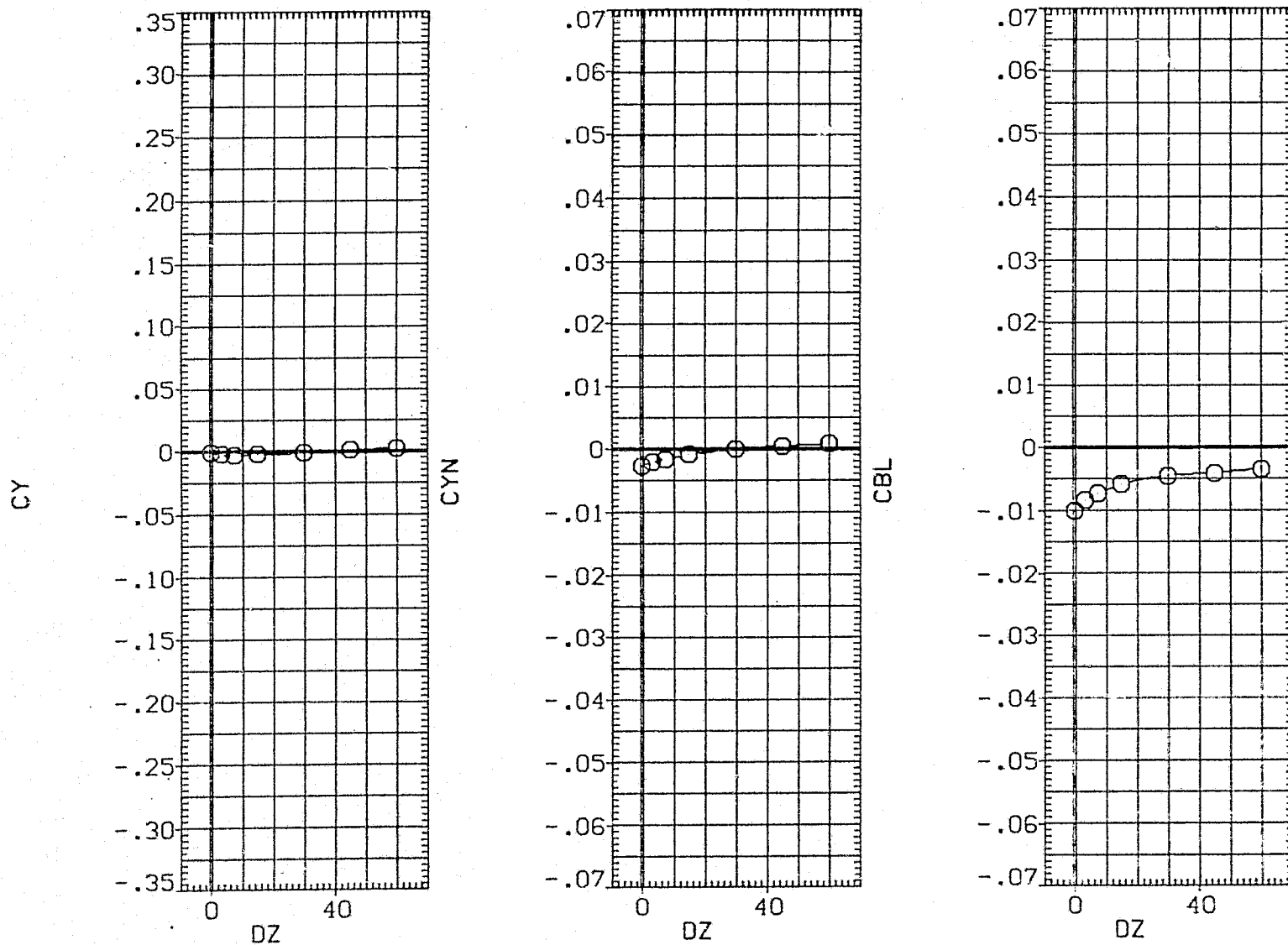


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

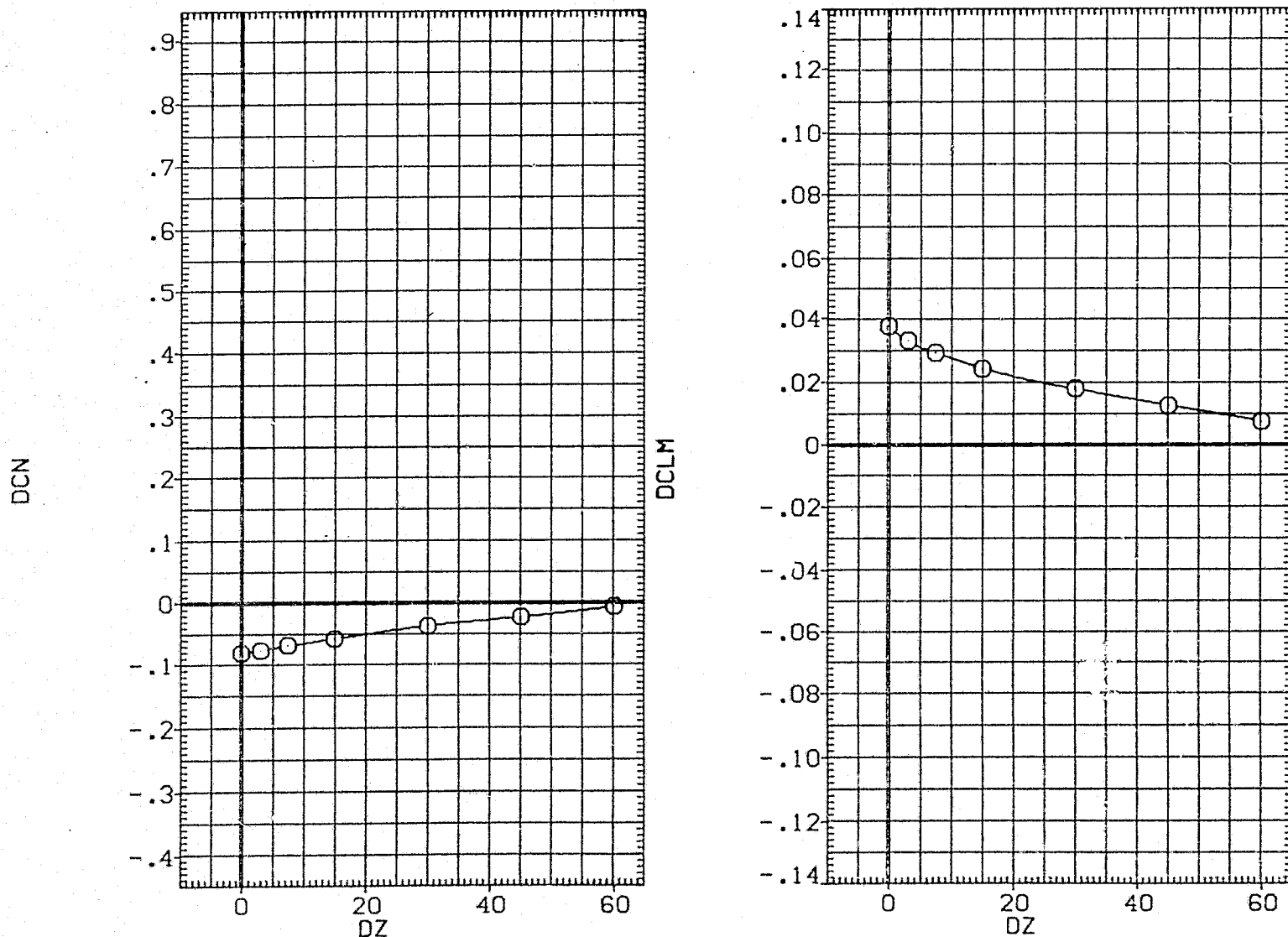


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (137 - 018)(VGN137)

SYMBOL	ALPHA0	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	10.000	ALPHAC	4.000	BETAC	.000	SREF	2690.0000	SQ.FT.
		ELV-1B	.000	ELV-0B	3.000	LREF	474.8100	IN.
		ELEVON	5.000	MACH	.600	BREF	936.6800	IN.
		PHI	.000	DX	.000	XMRP	1109.0000	IN.X0
		DY	10.000	BETAB	.000	YMRP	.0000	IN.Y0
						ZMRP	375.0000	IN.Z0
						SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

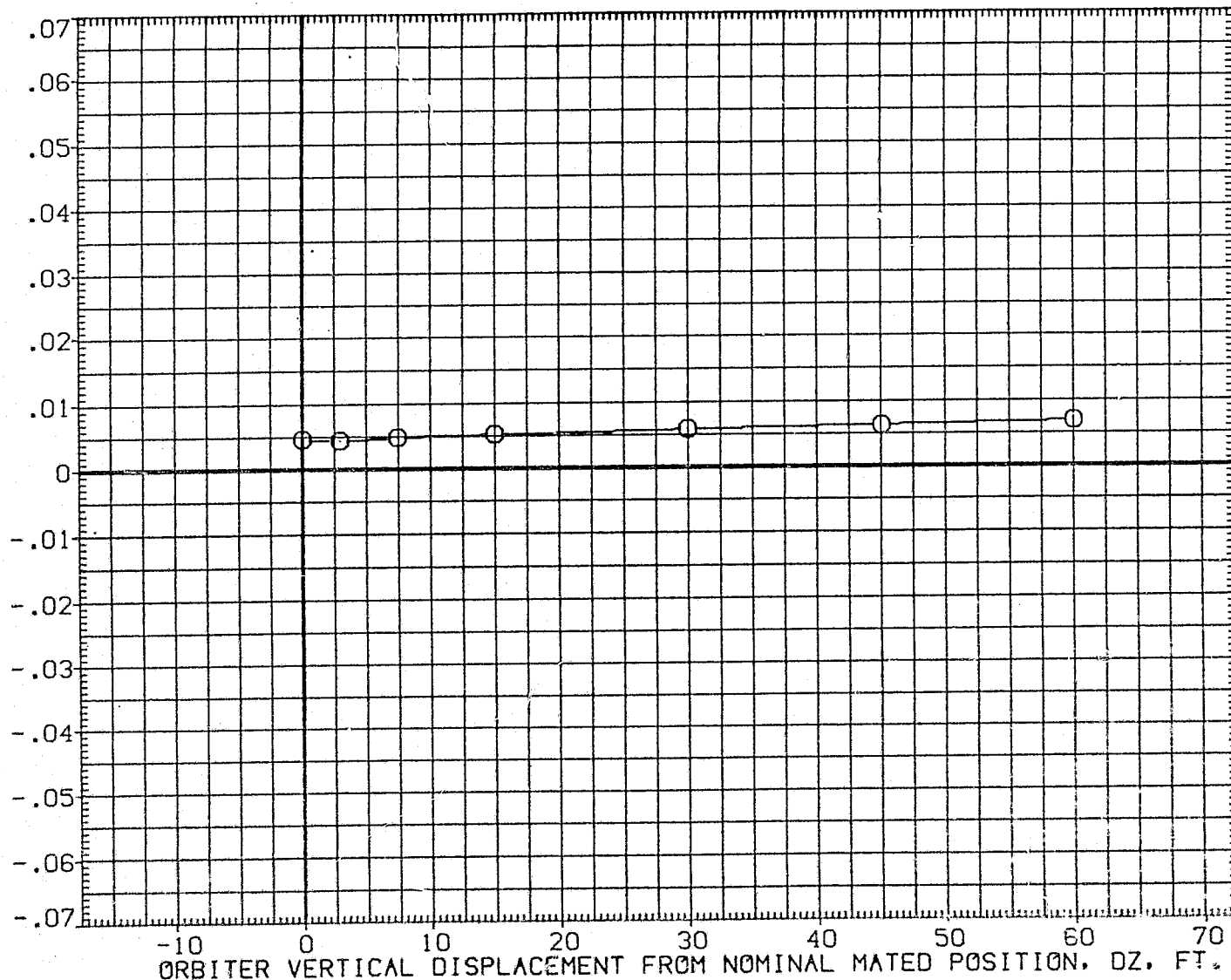


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

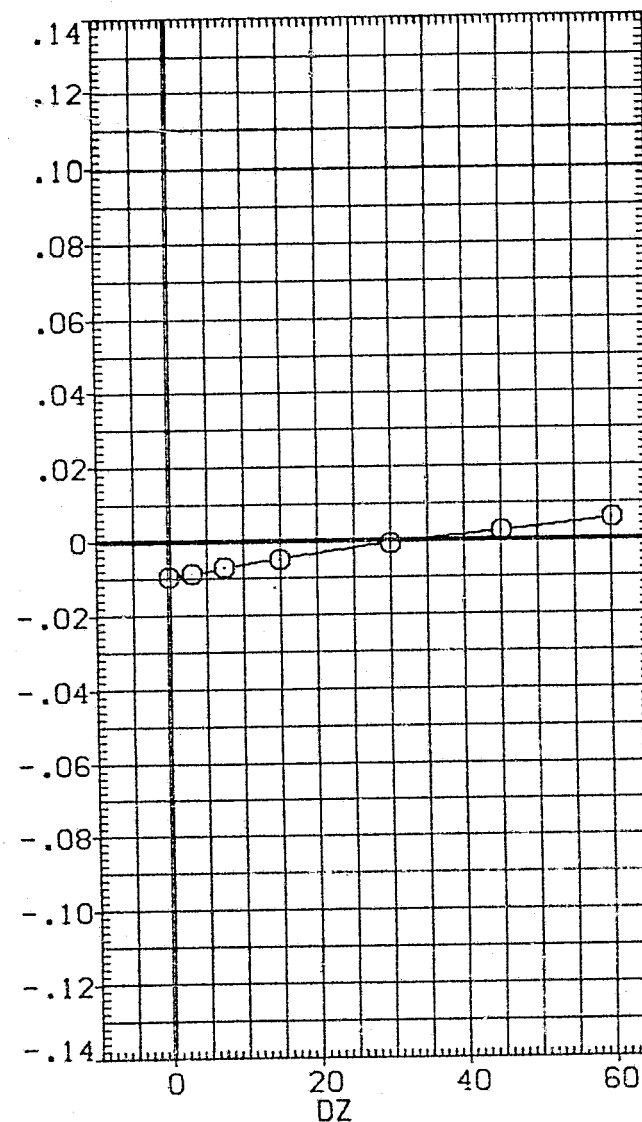
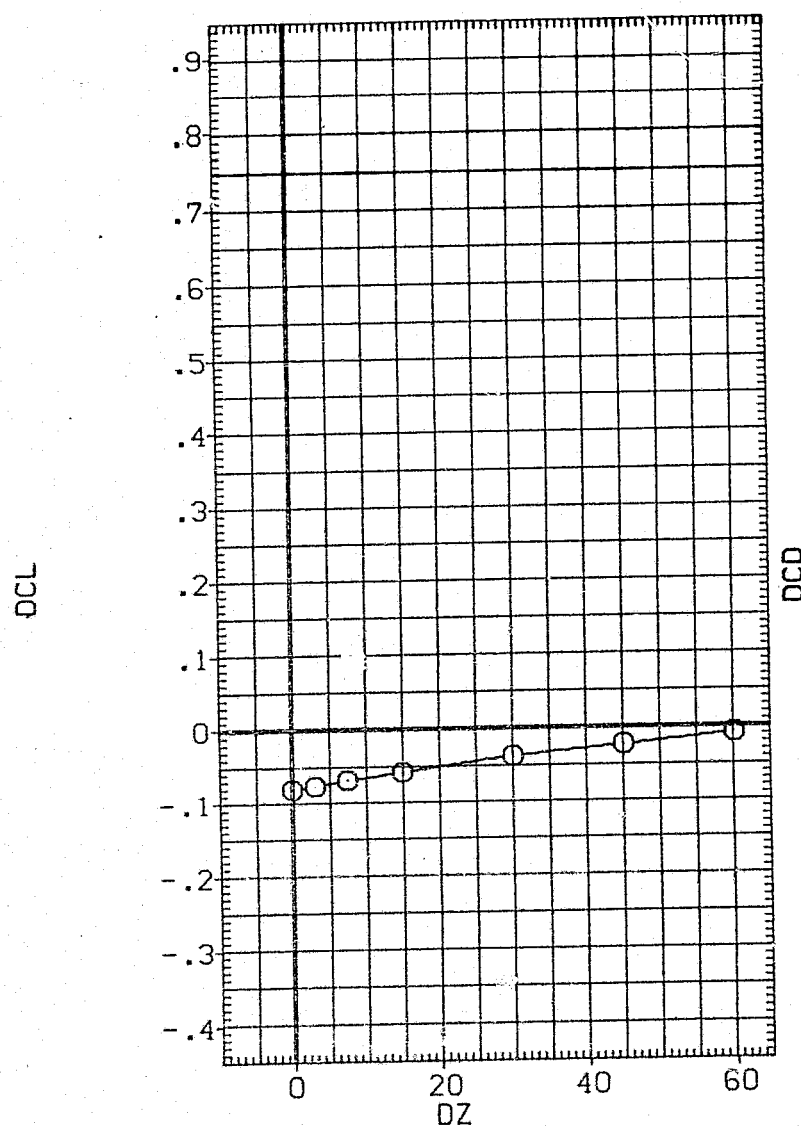


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

C.9

CA20 747/1 02 S1

ORBITER DATA (NGN138)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
		ALPHAC	4.000	BETAC	.000
O	10.000	ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

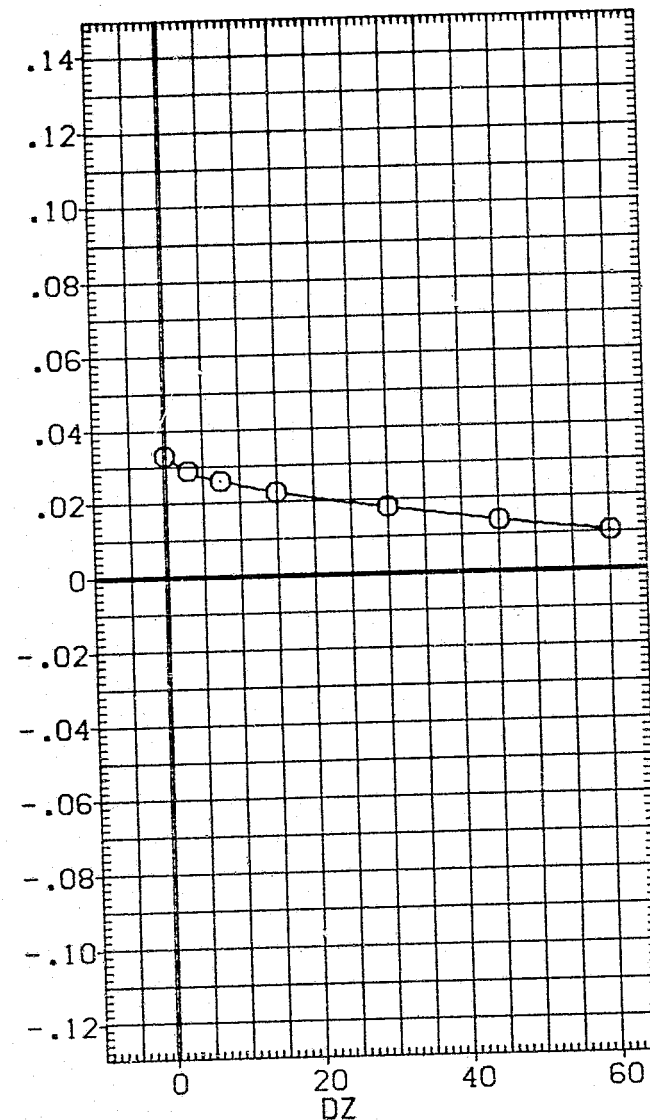
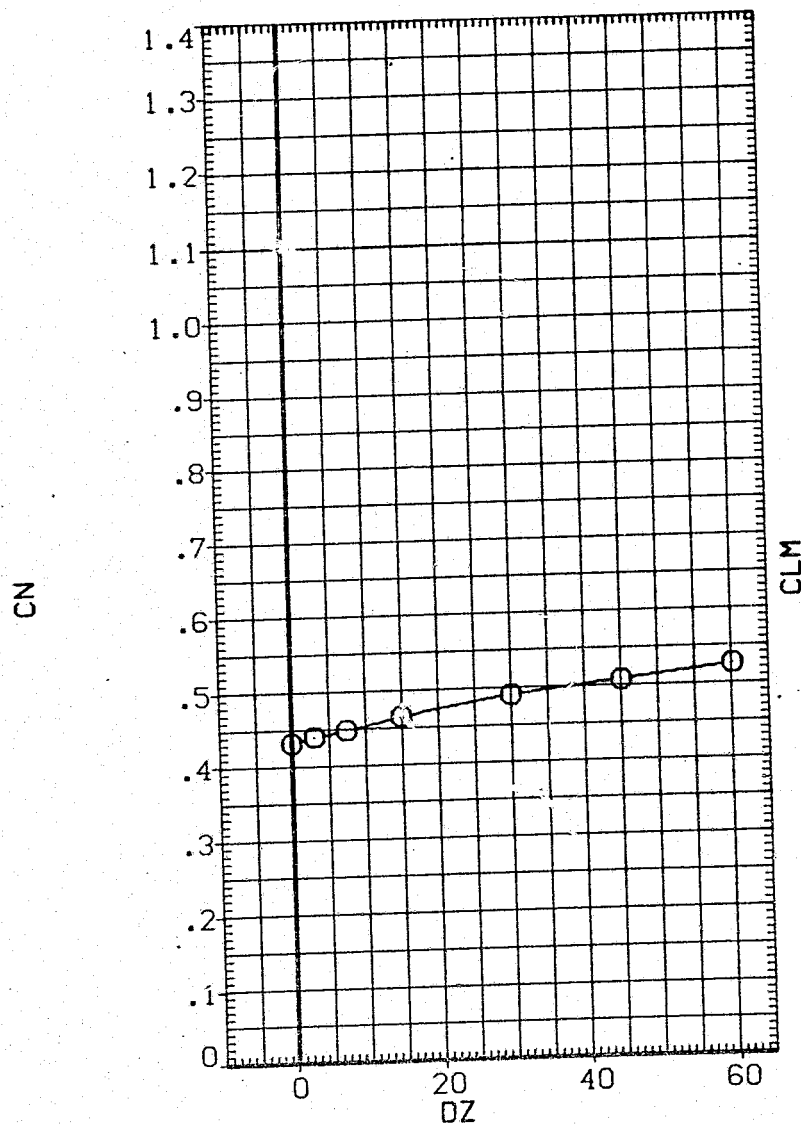


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN138)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

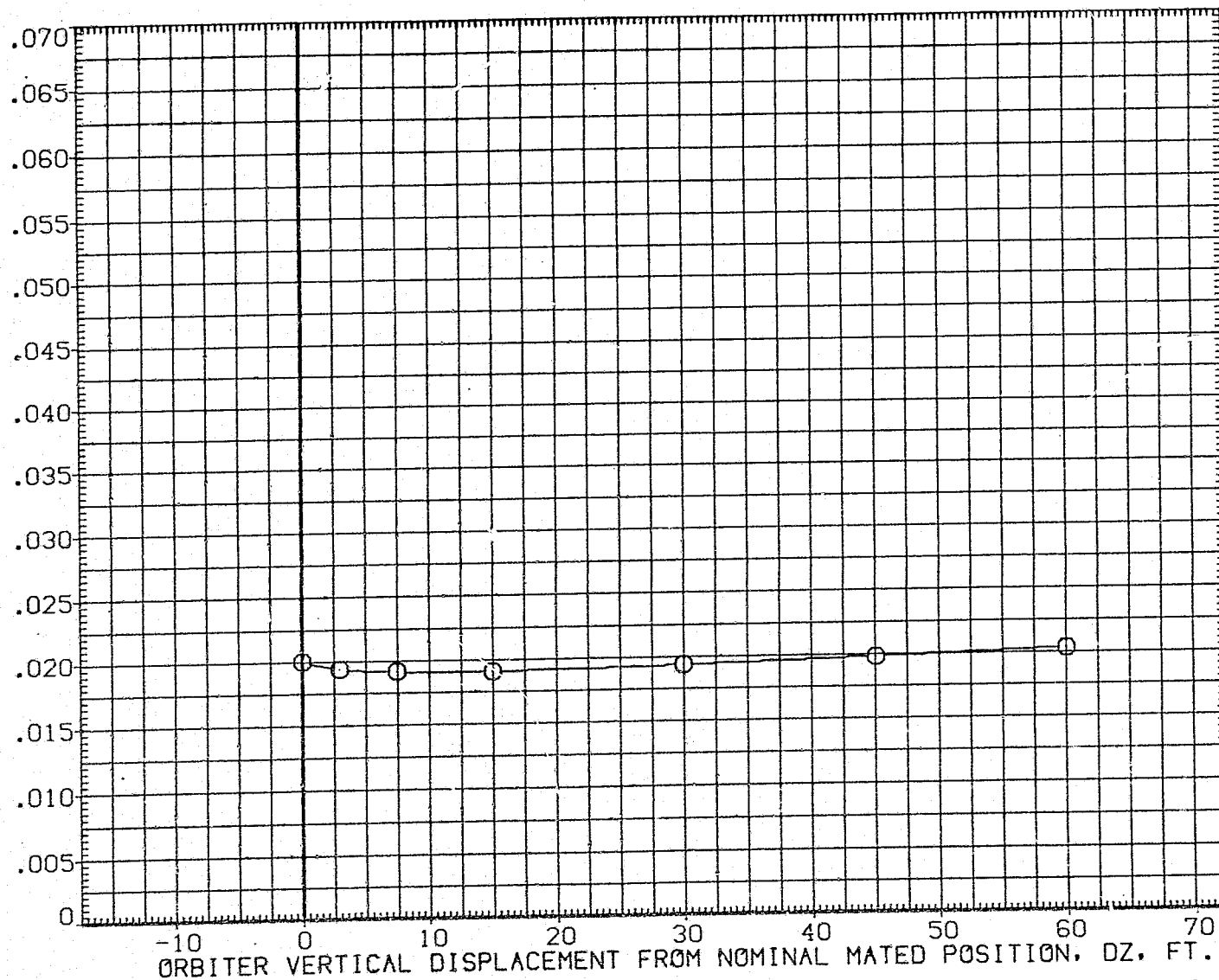


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN138)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

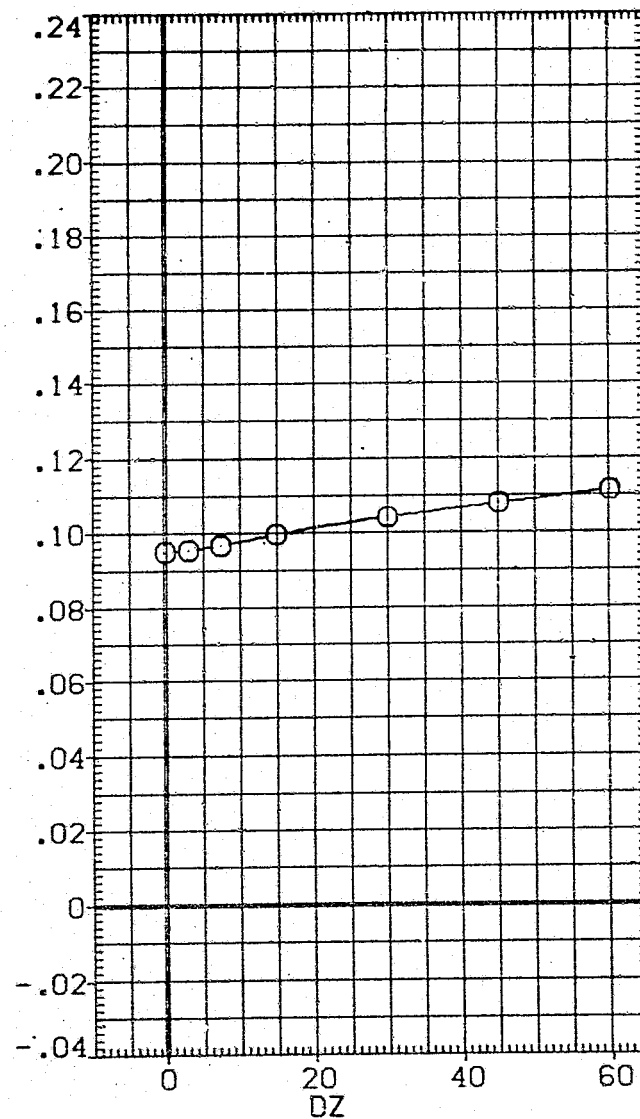
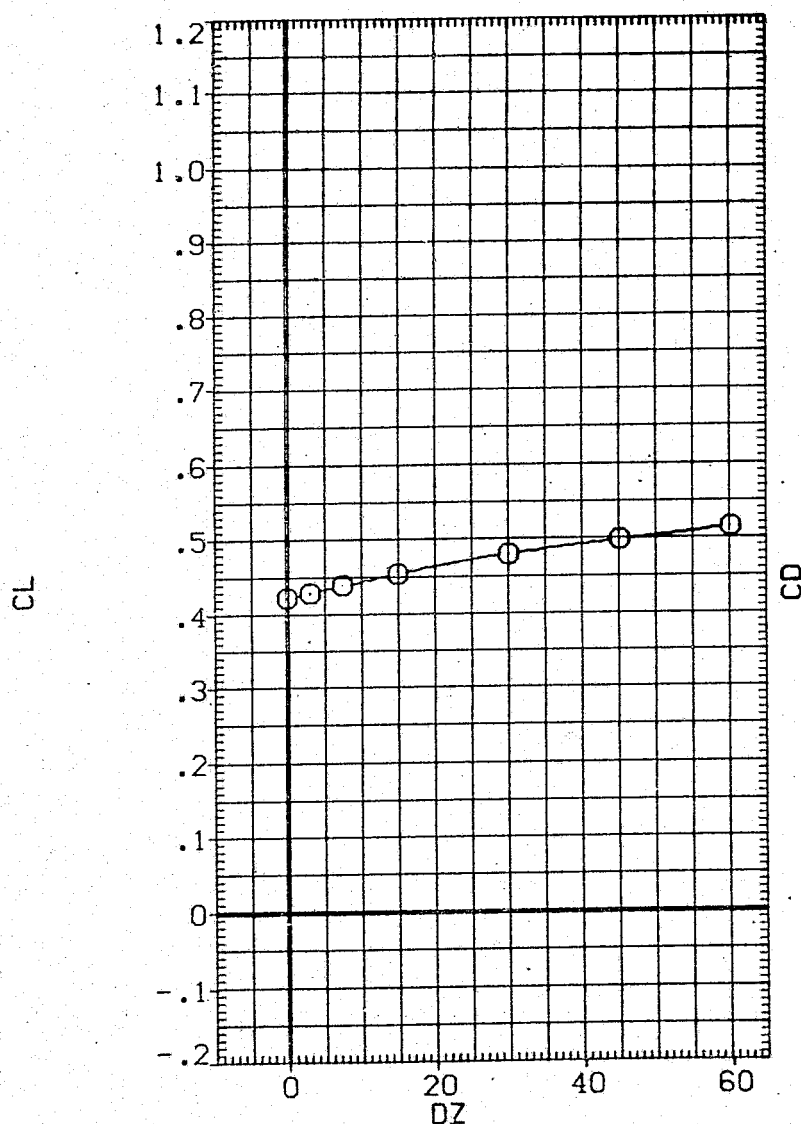


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHA0 4.000	BETAC .000
		ELV-IB .000	ELV-OB 3.000
		ELEVON 5.000	MACH .600
		BETA0 .000	PHI .000
		DY 10.000	DX 10.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

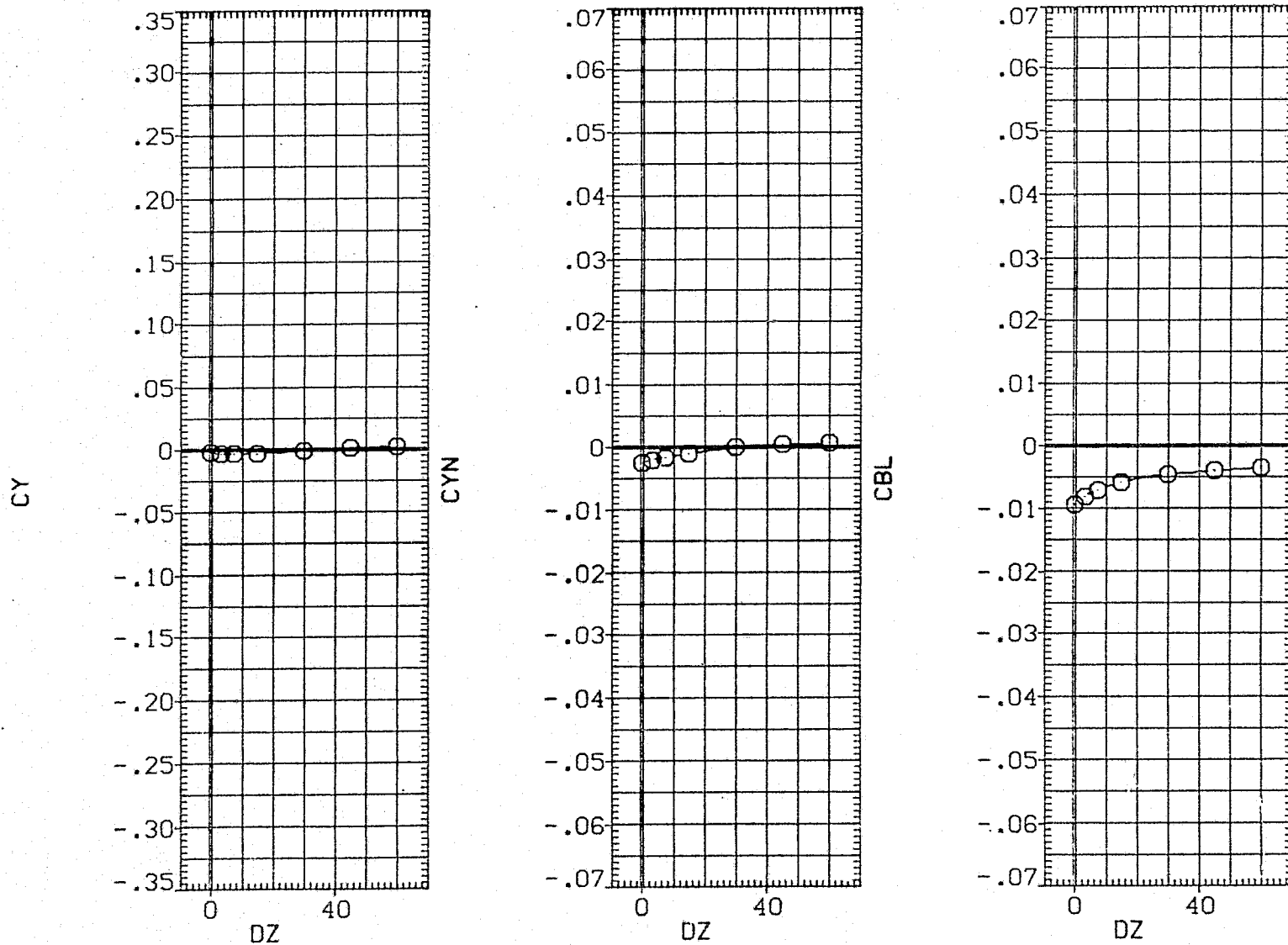


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (138 - 018)(V6N138)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

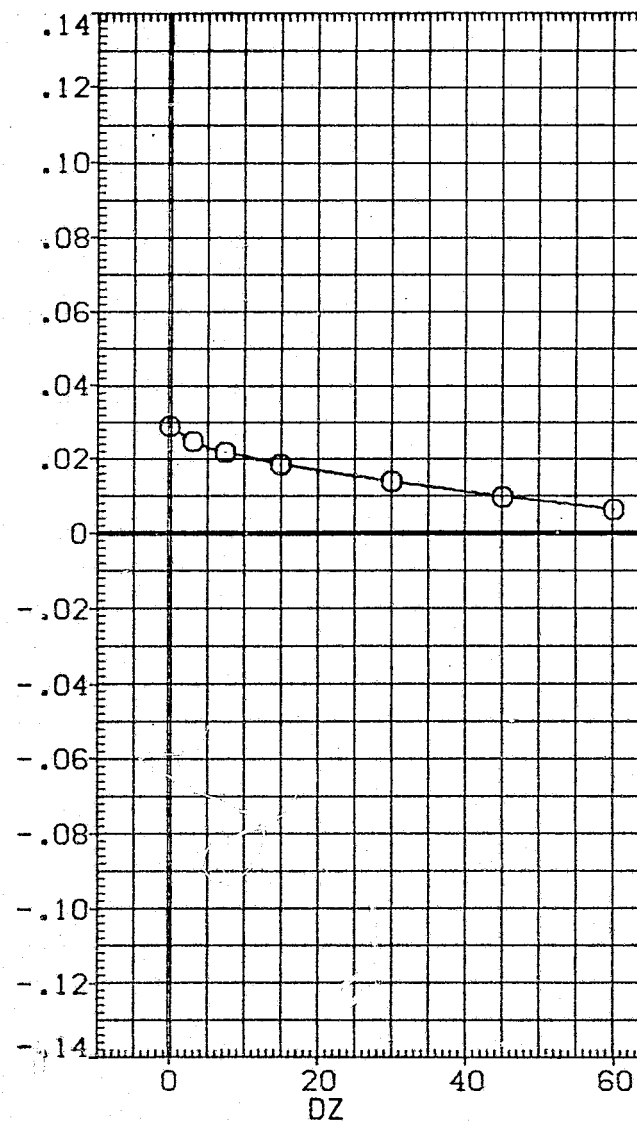
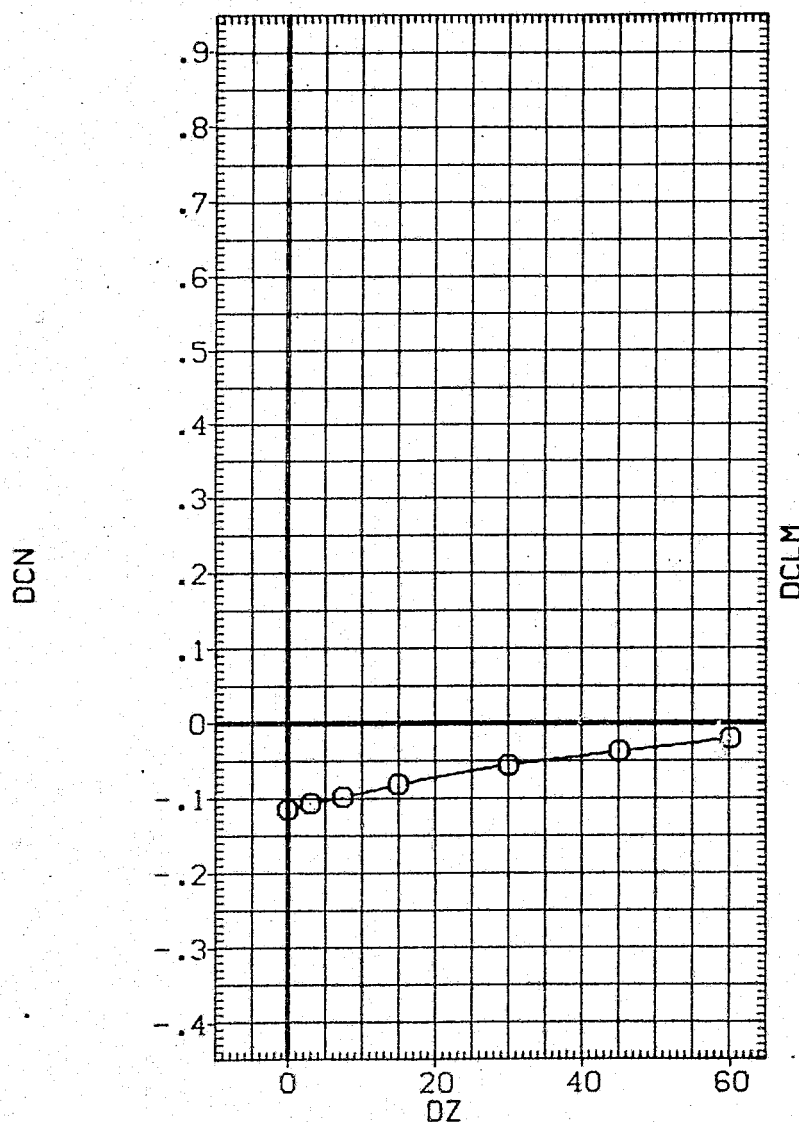


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL
○ALPHA0
10.000ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000	BETAC	.000
.000	ELV-OB	3.000
5.000	MACH	.600
.000	DX	10.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

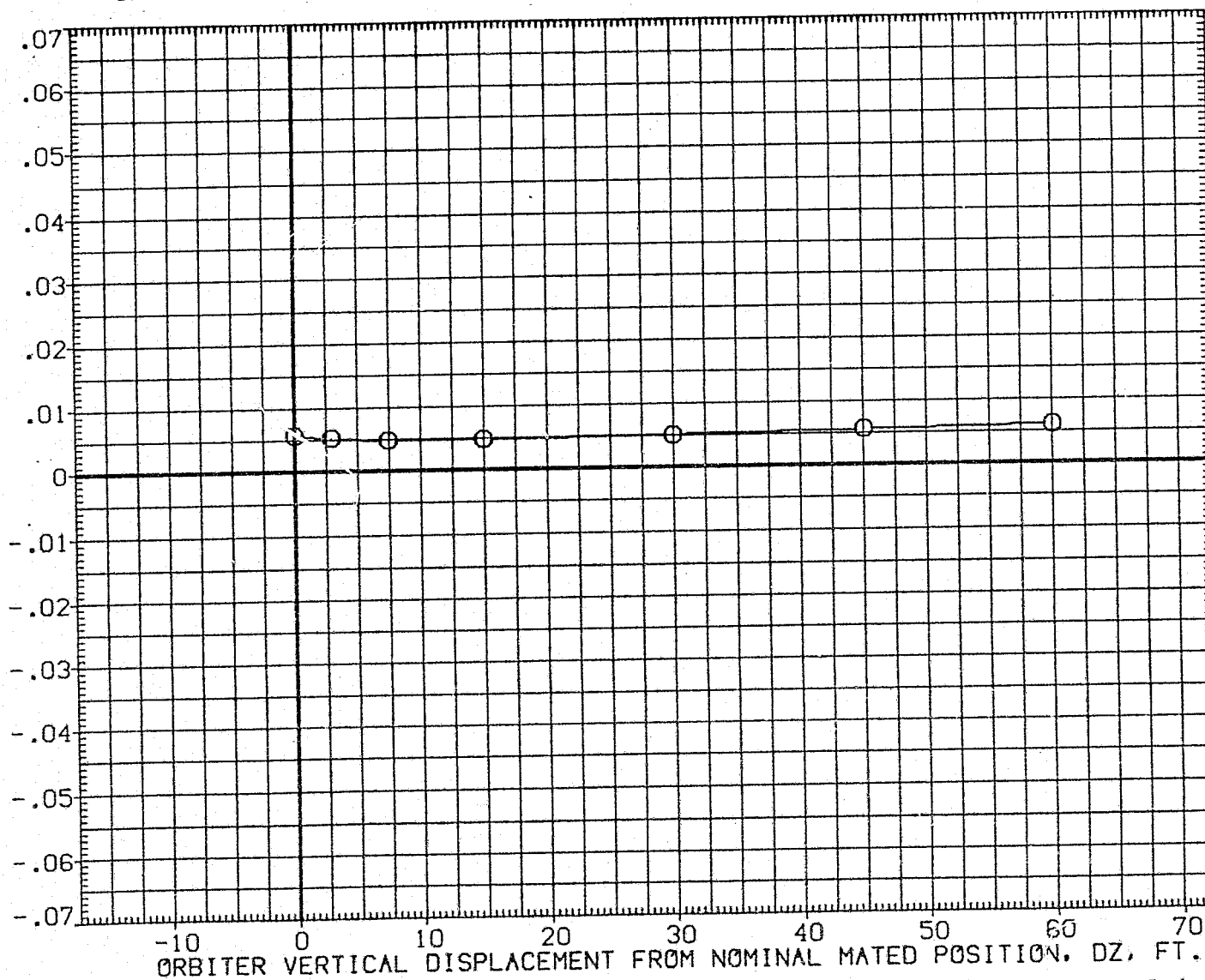


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (138 - 018) (VGN138)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	10.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

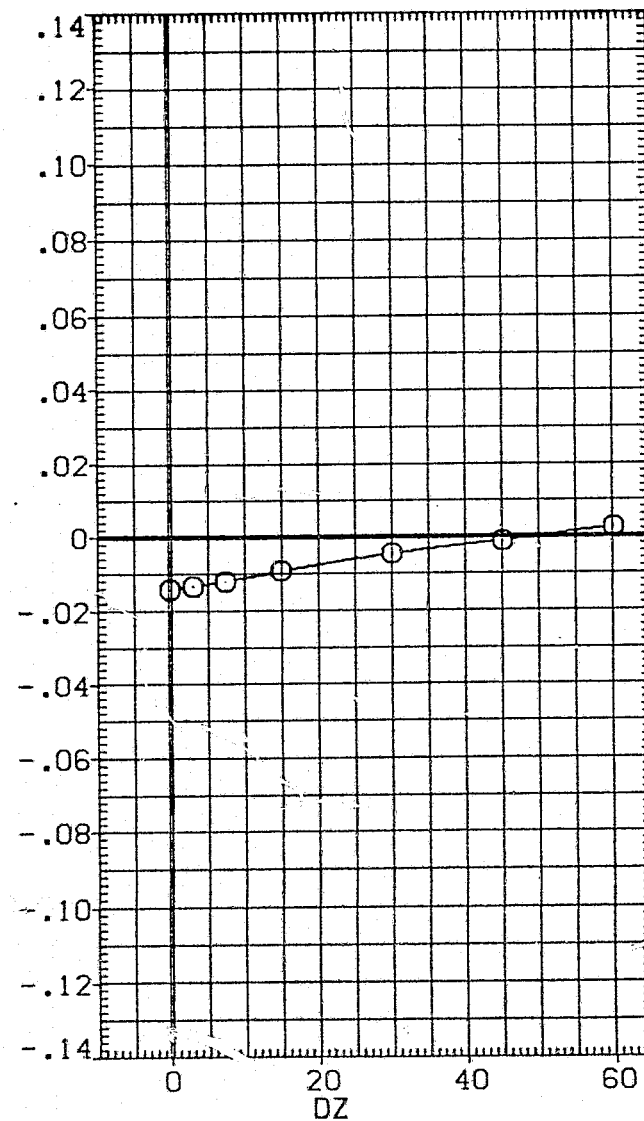
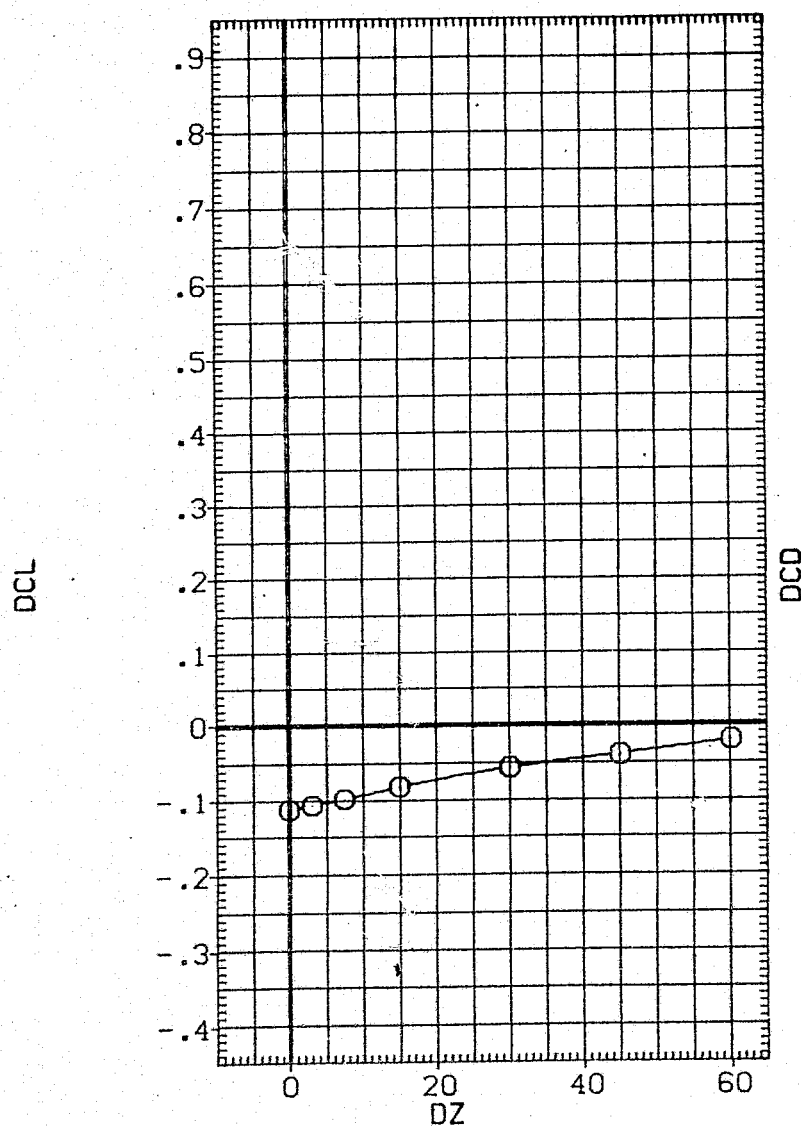


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN139)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

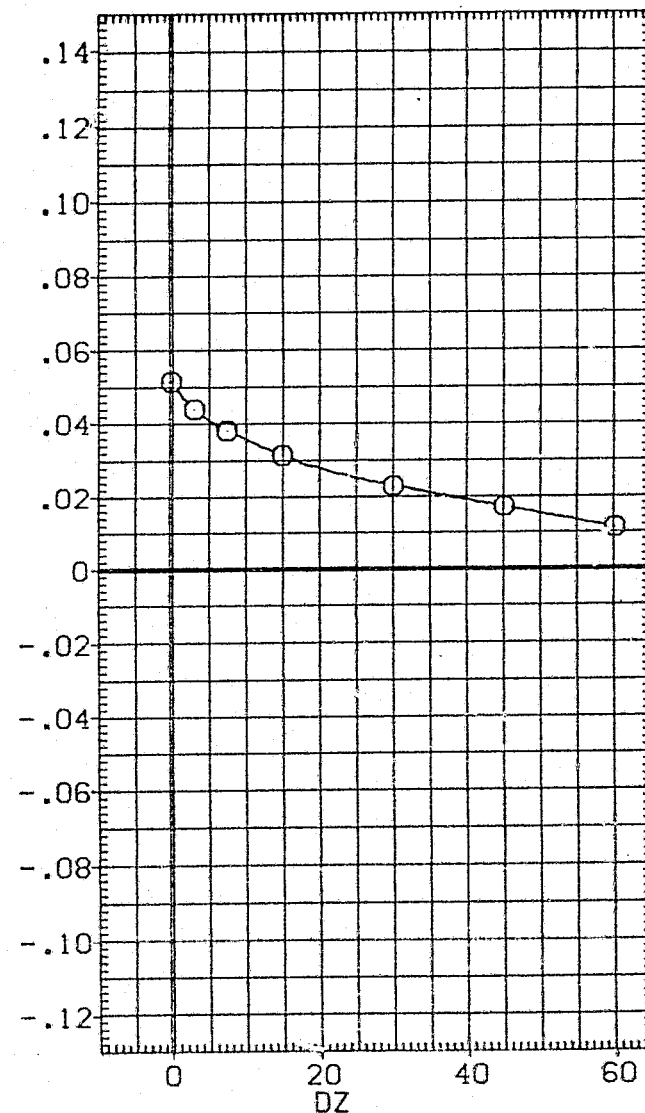
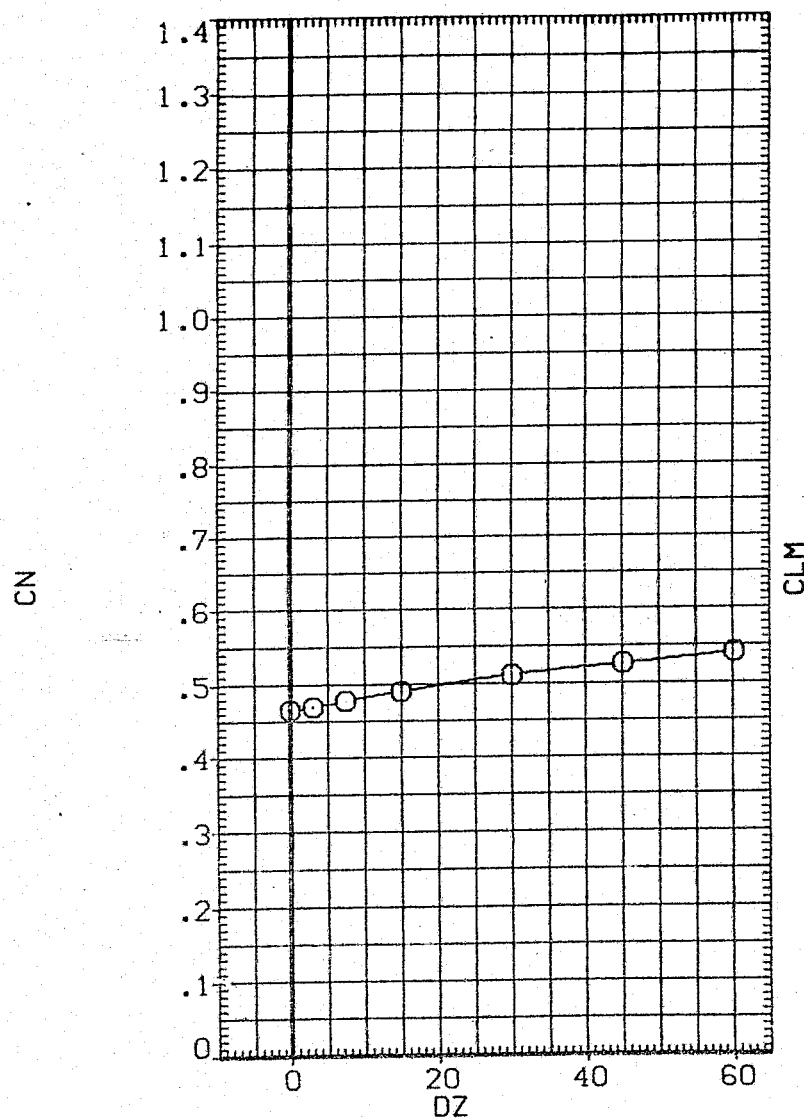


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA(NGN139)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 SETAC 5.000
		ELV-1B .000 ELV-0B 3.000
		ELEVON 5.000 MACH .600
		BETA0 .000 PHI .000
		OY 10.000 DX .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

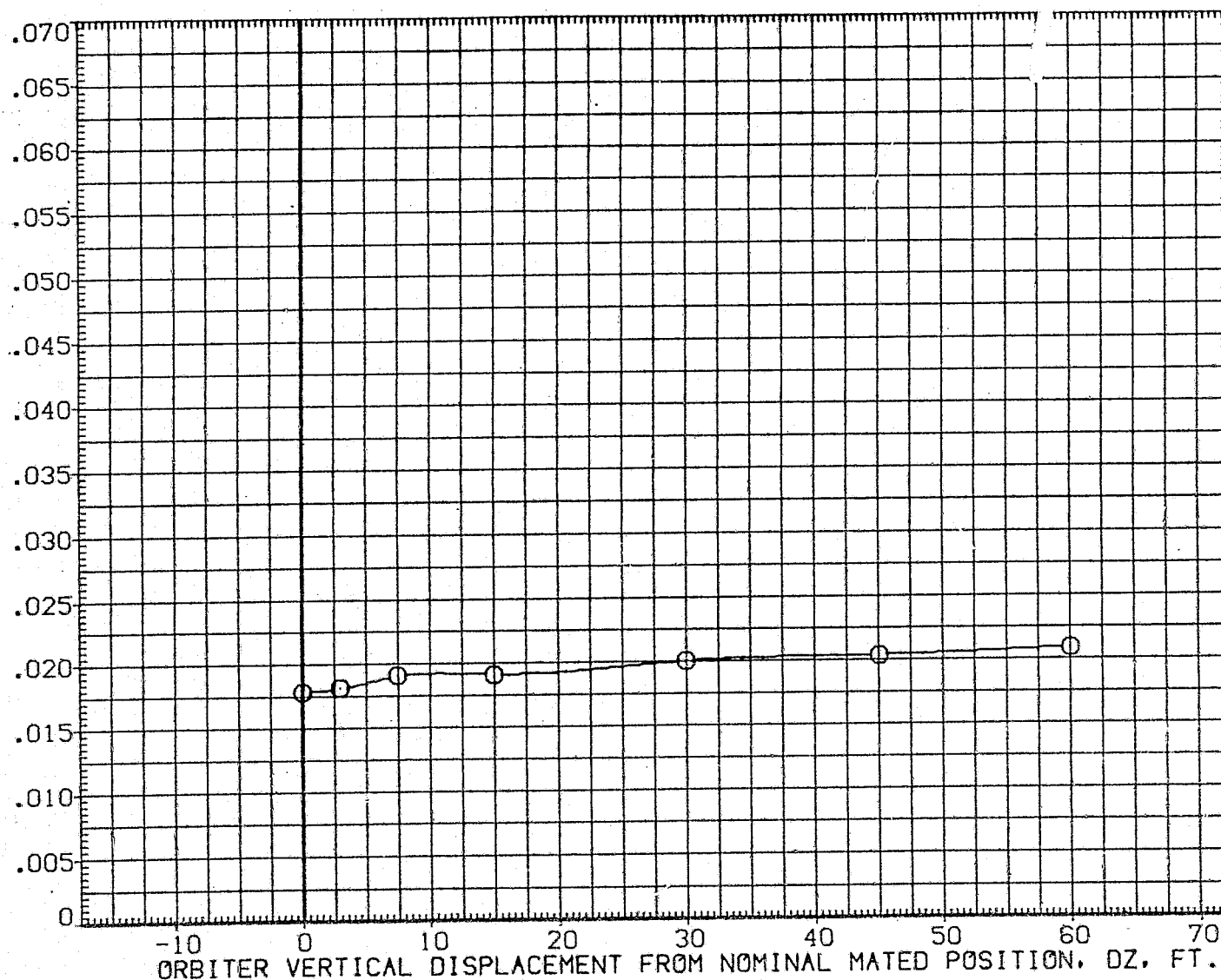


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL

○

ALPHA0

10.000

PARAMETRIC VALUES

ALPHA0

4.000

BETA0

5.000

ELV-IB

.000

ELV-OB

3.000

ELEVON

5.000

MACH

.600

BETA0

.000

PHI

.000

DY

10.000

DX

.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

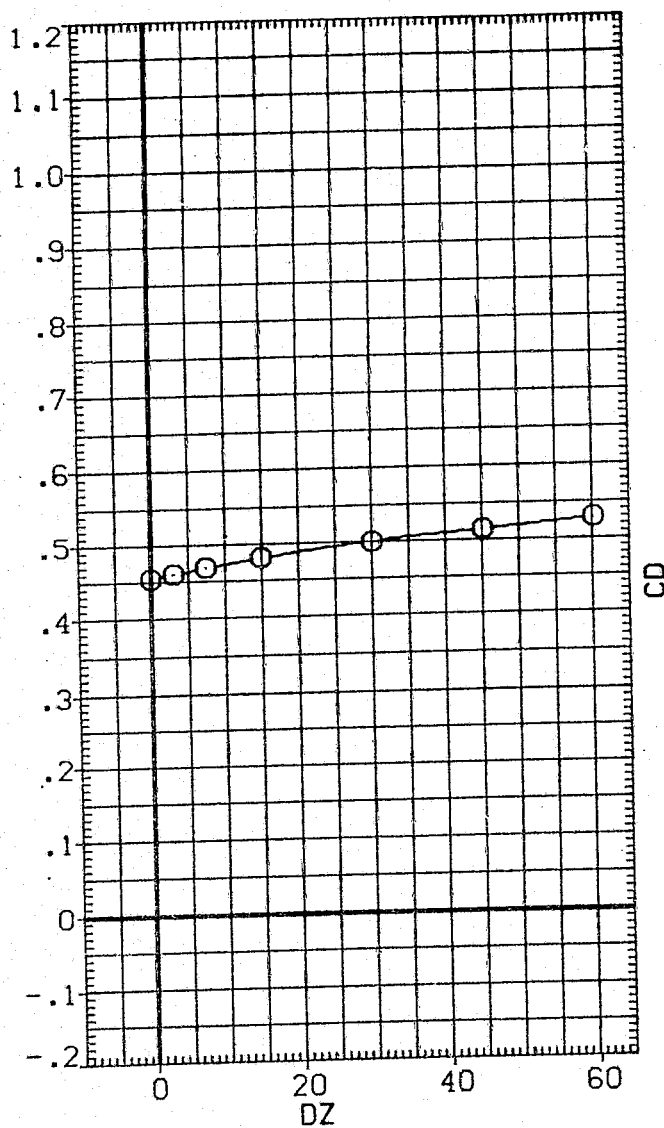
375.0000

IN.Z0

SCALE

.0300

CL



CD

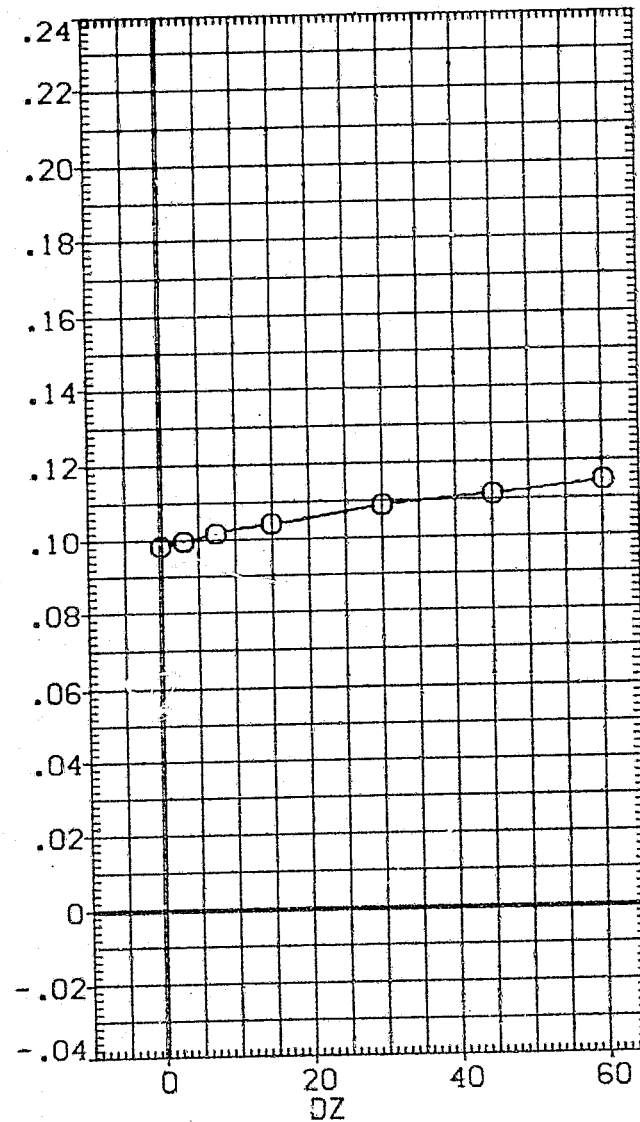


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN139)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

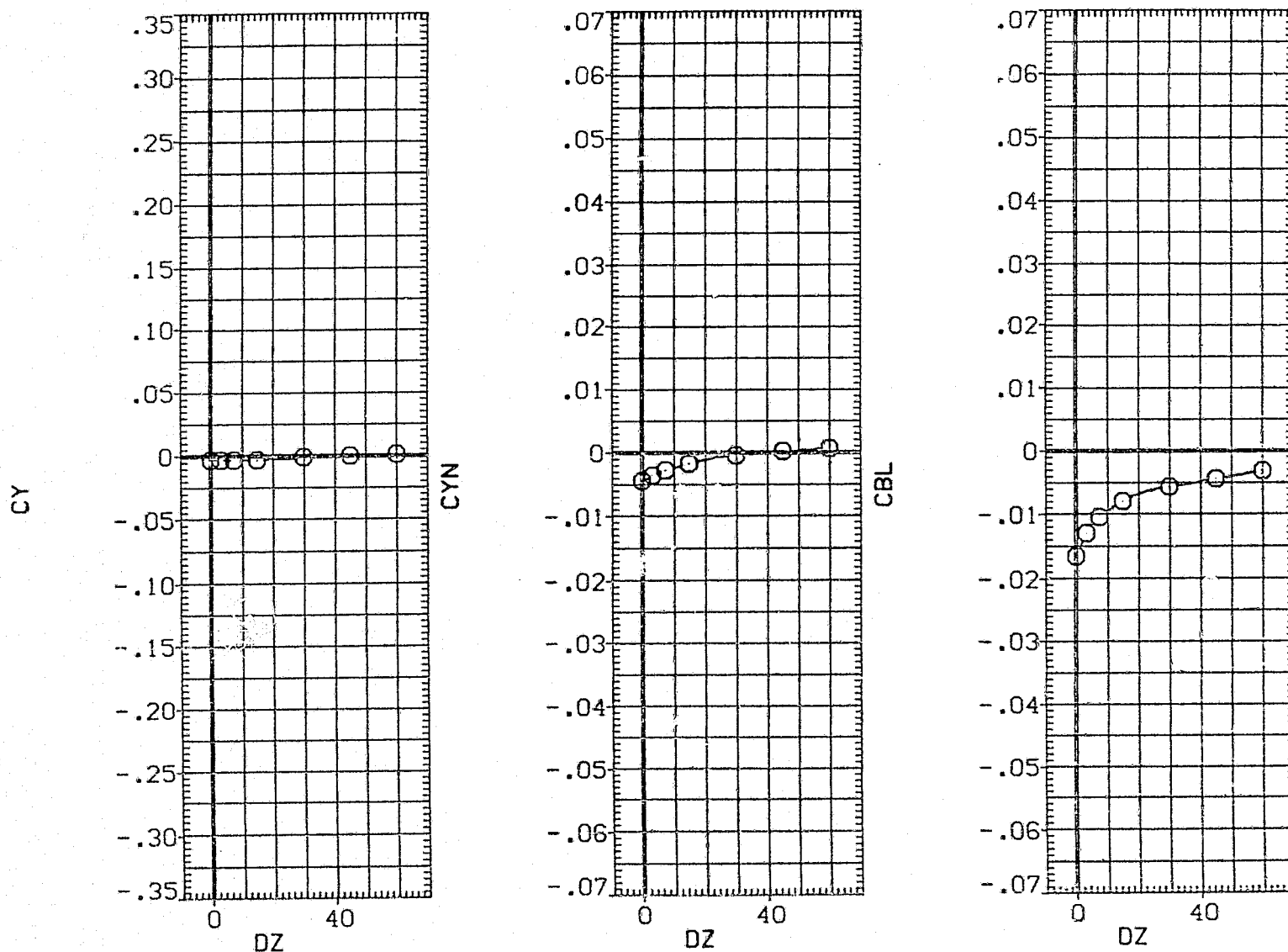


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

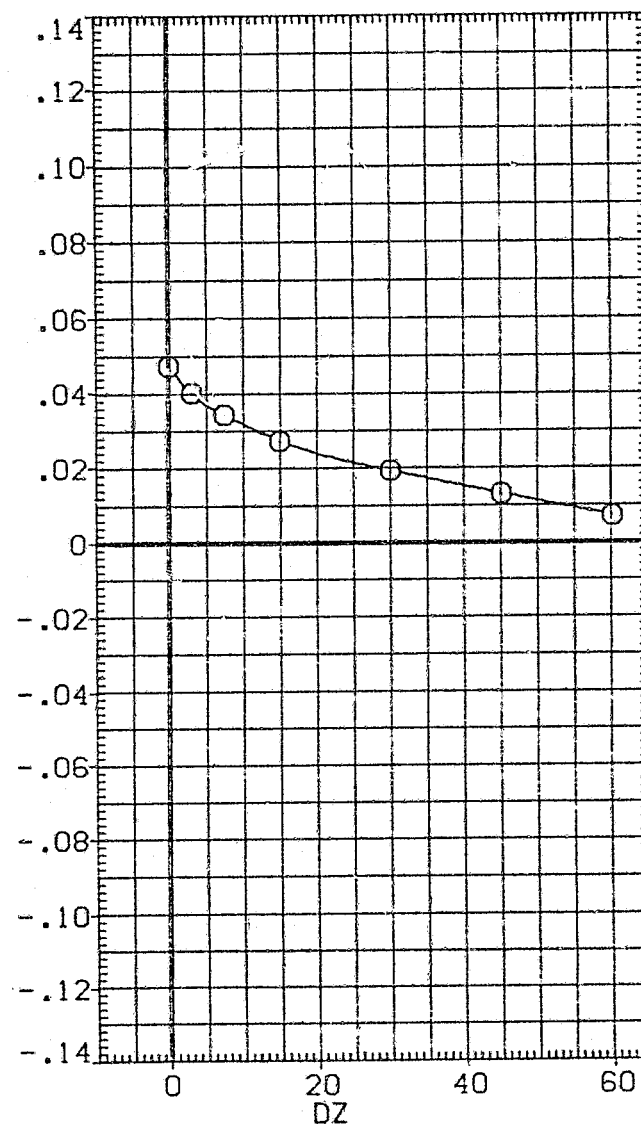
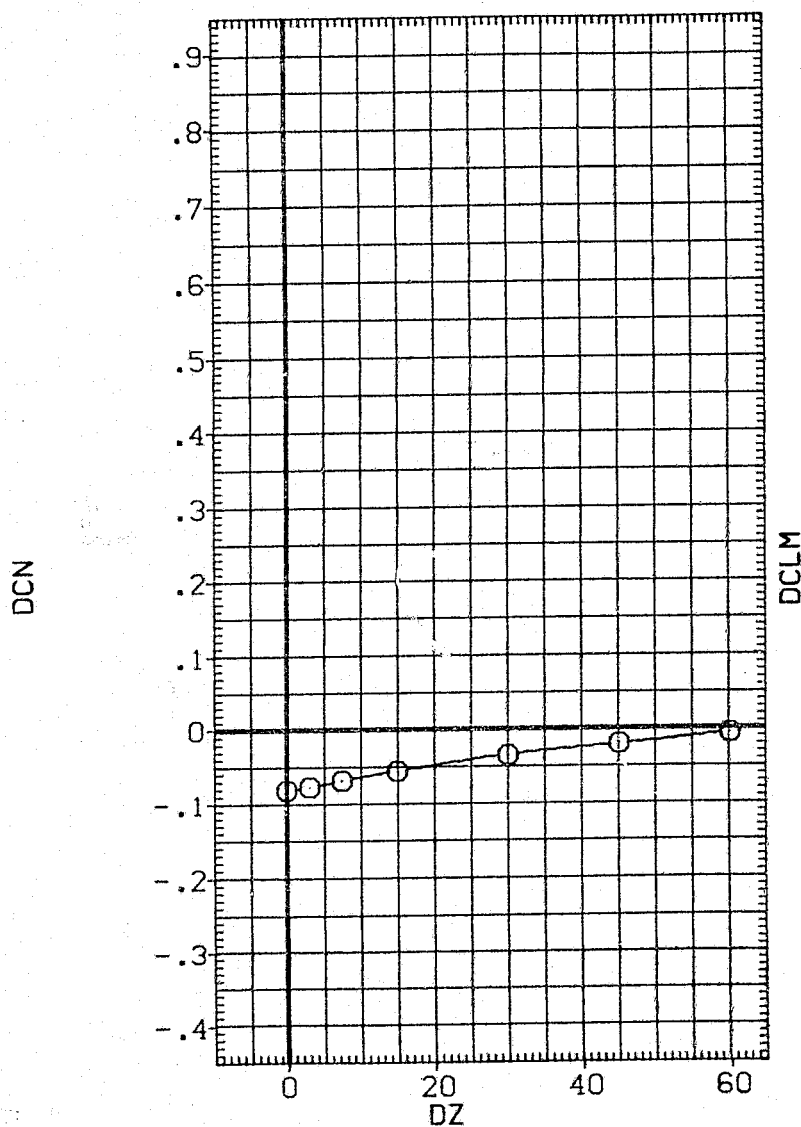


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (139 - 018)(VGN139)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

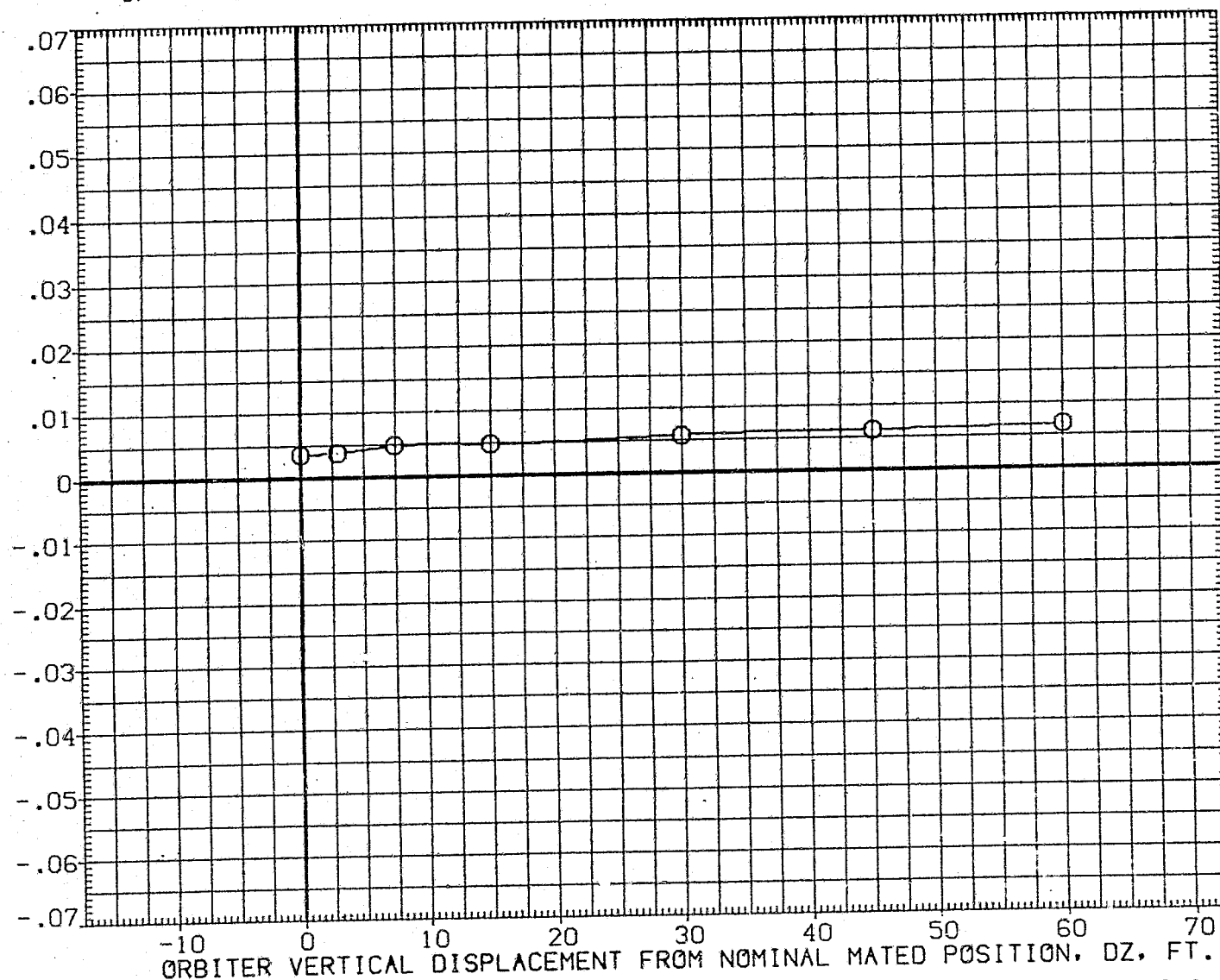


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

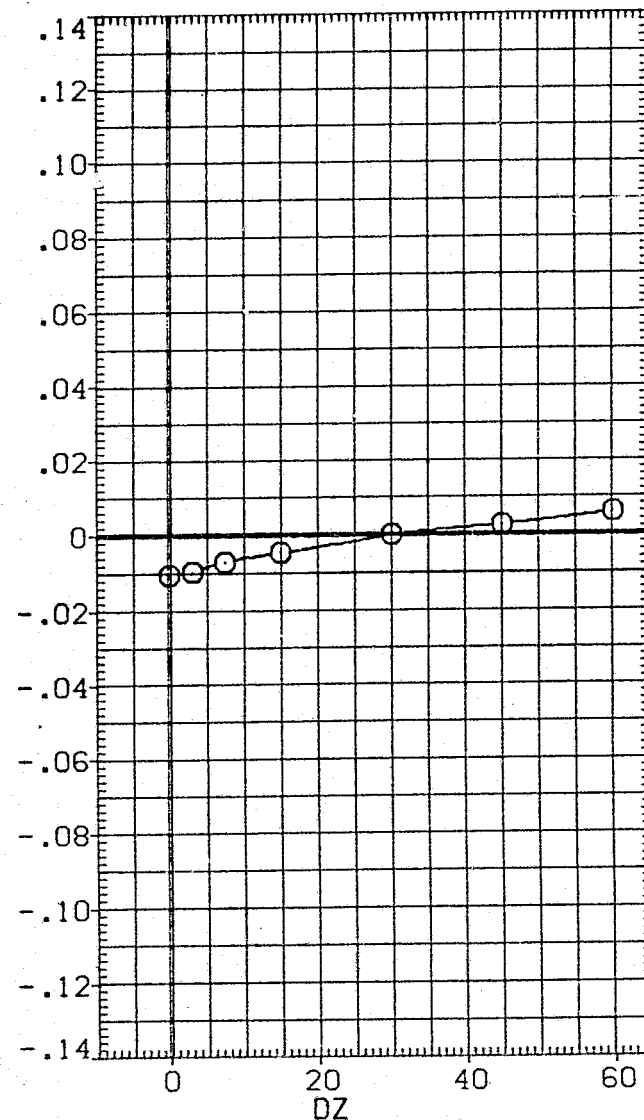
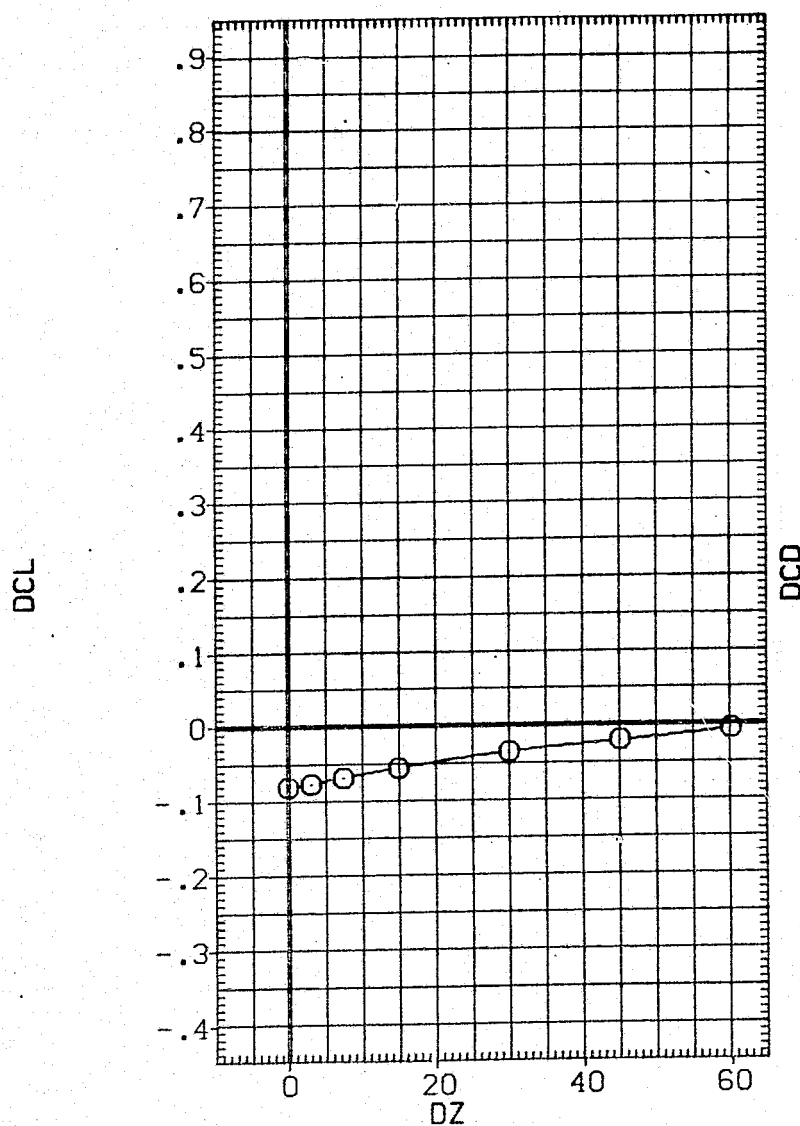


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN140)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETAO	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

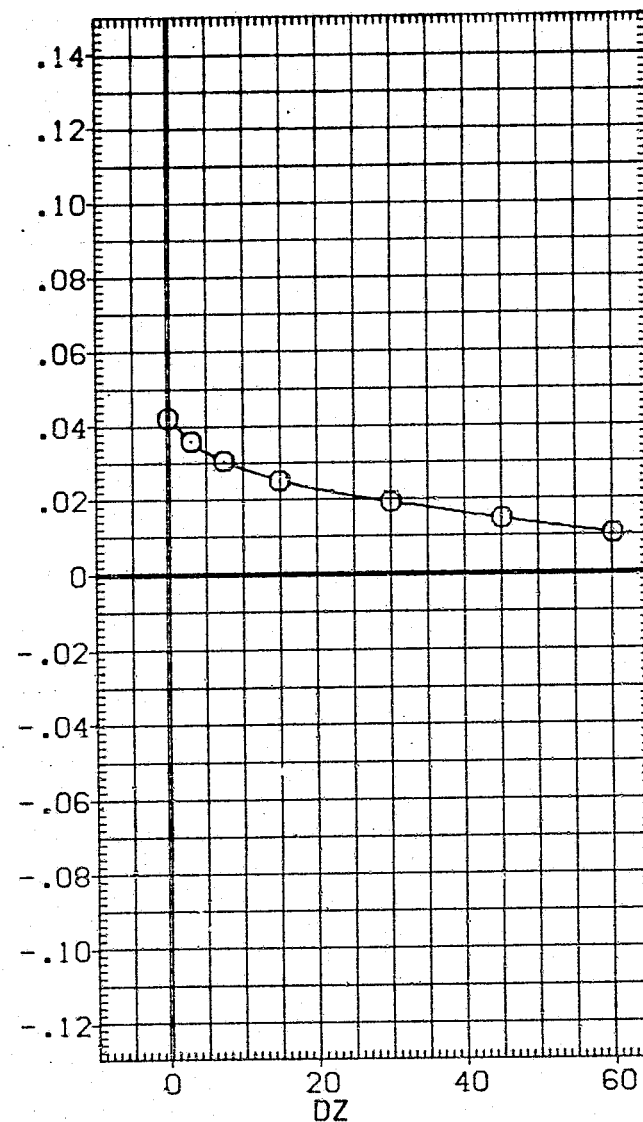
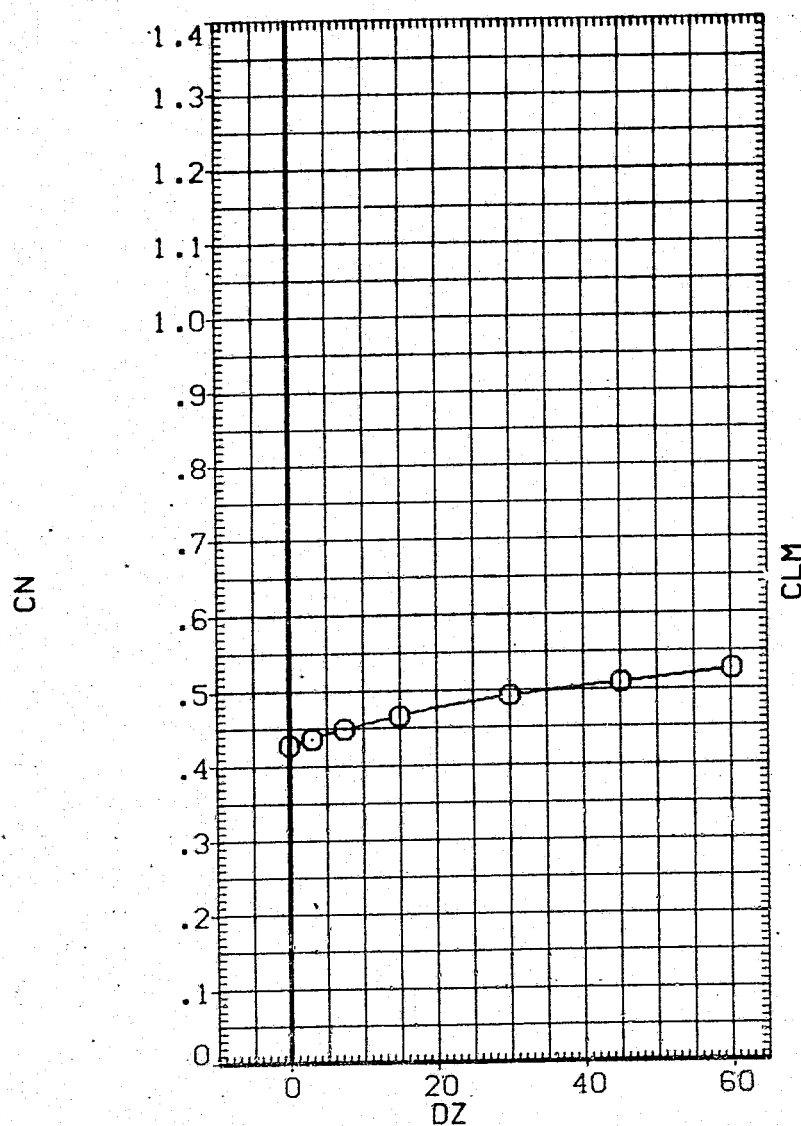


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-IB	.000	ELV-OB	3.000
		ELEVON	5.000	MACH	.600
		BETA0	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

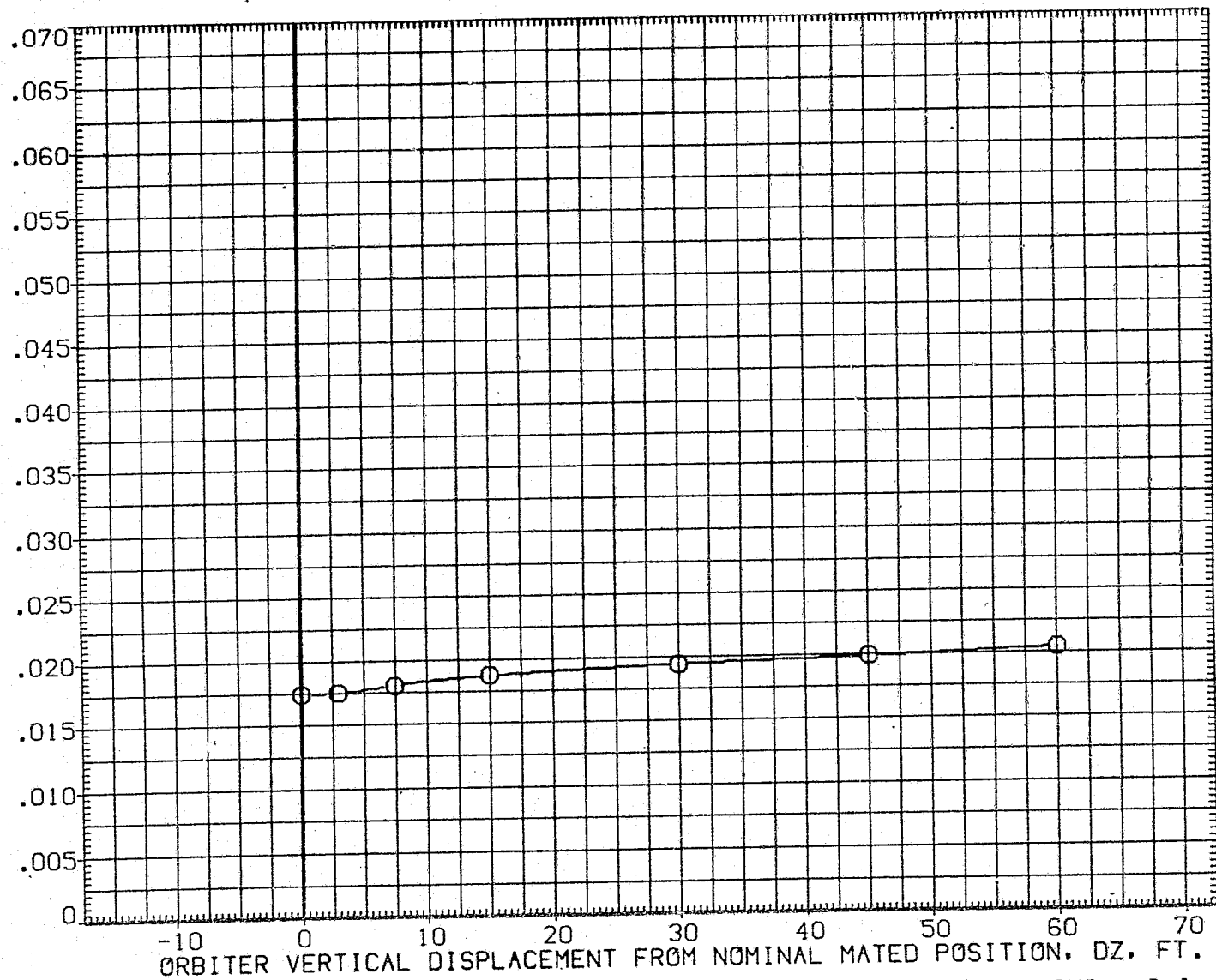


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 02 S1

ORBITER DATA (NGN140)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
O	10.000	ALPHAC	4.000	BETAC	5.000
		ELV-1B	.000	ELV-0B	3.000
		ELEVON	5.000	MACH	.600
		BETAO	.000	PHI	.000
		DY	10.000	DX	10.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

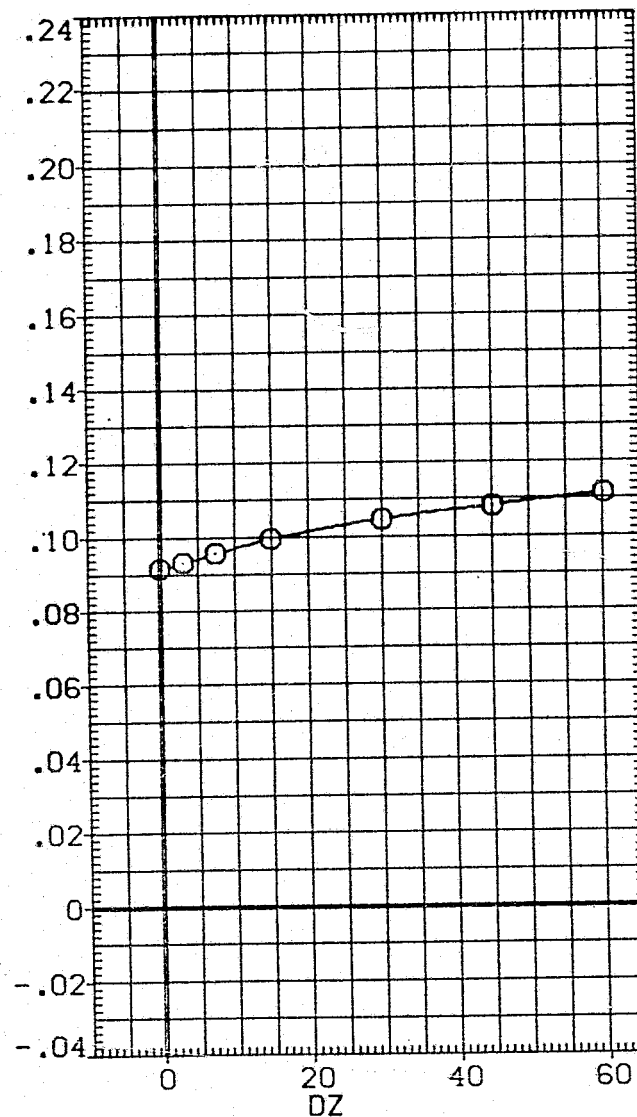
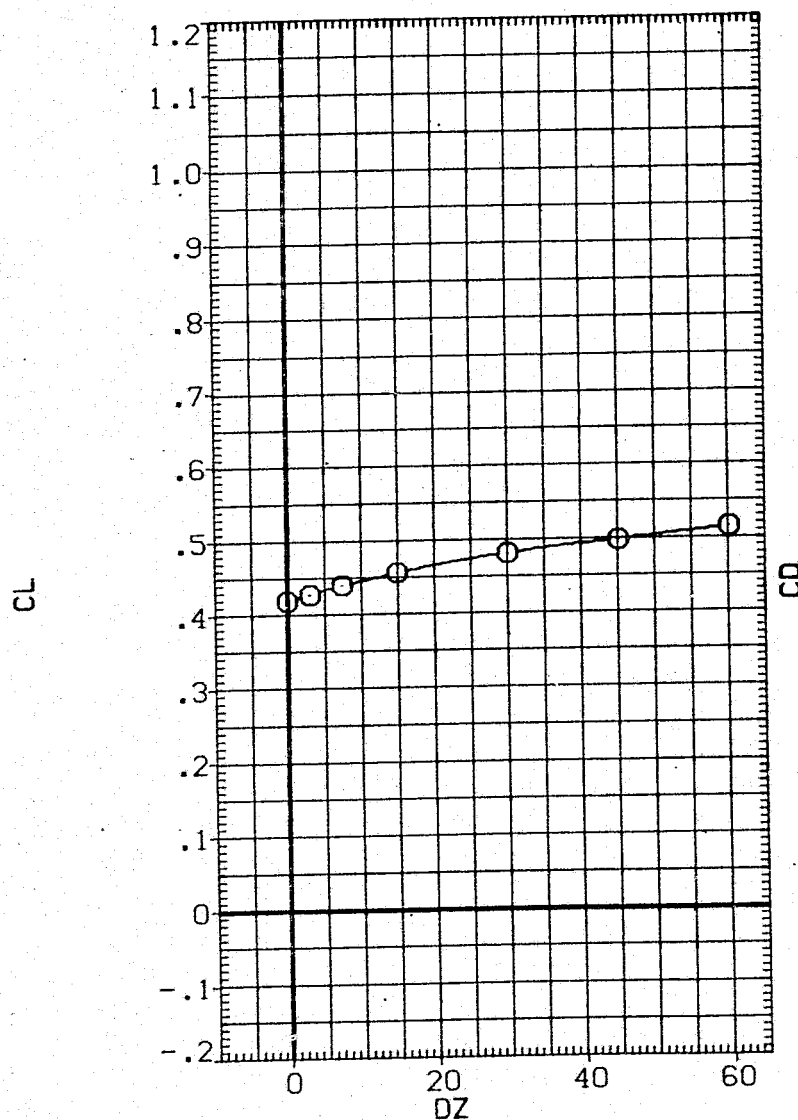


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ALPHAC 4.000	BETAC 5.000
		ELV-1B .000	ELV-0B 3.000
		ELEVON 5.000	MACH .600
		BETA0 .000	PHI .000
		DY 10.000	DX 10.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

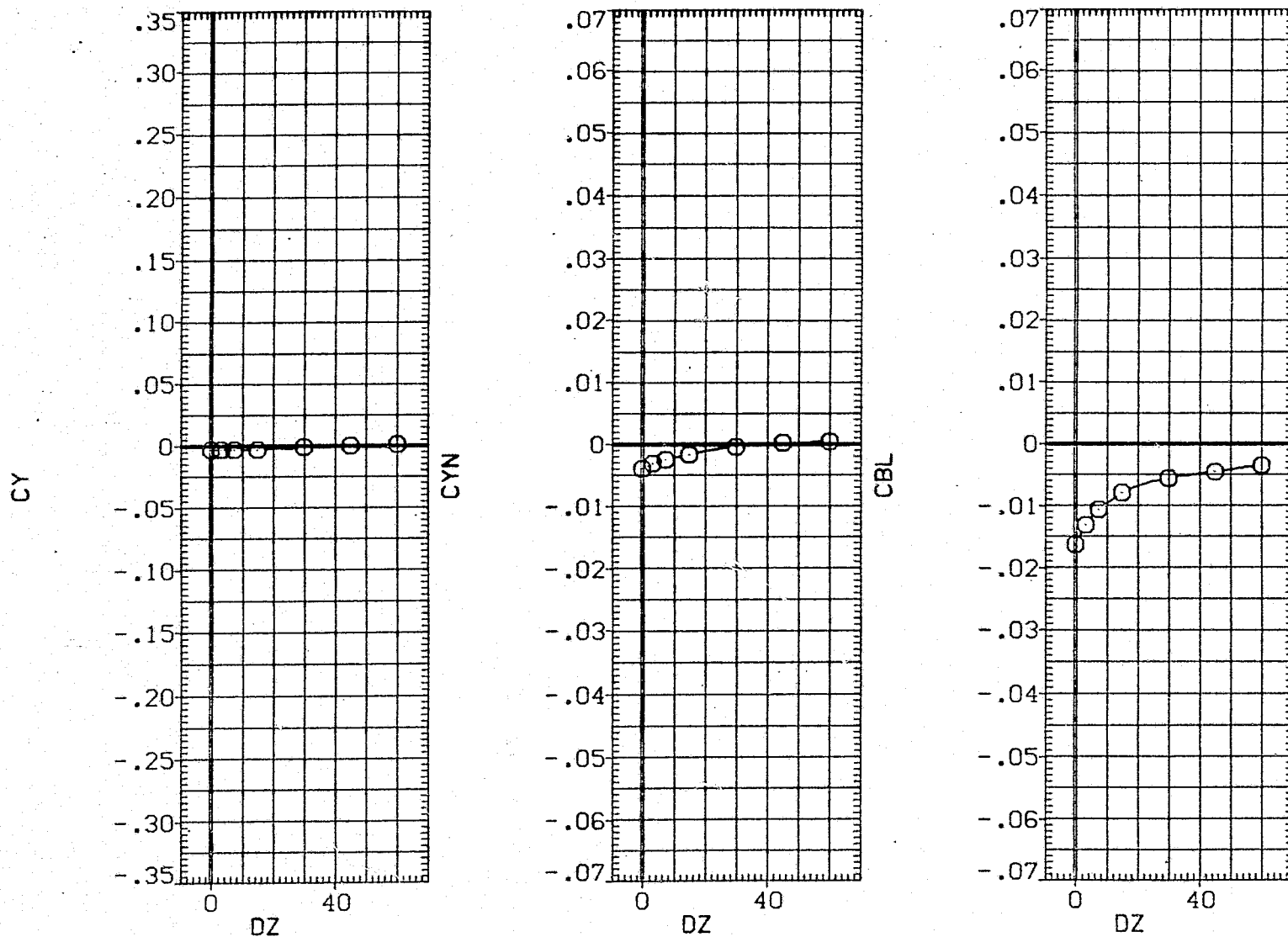


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (140 - 018) (VGN140)

SYMBOL
○ALPHA0
10.000ALPHAC
ELV-1B
ELEVON
PHI
DY

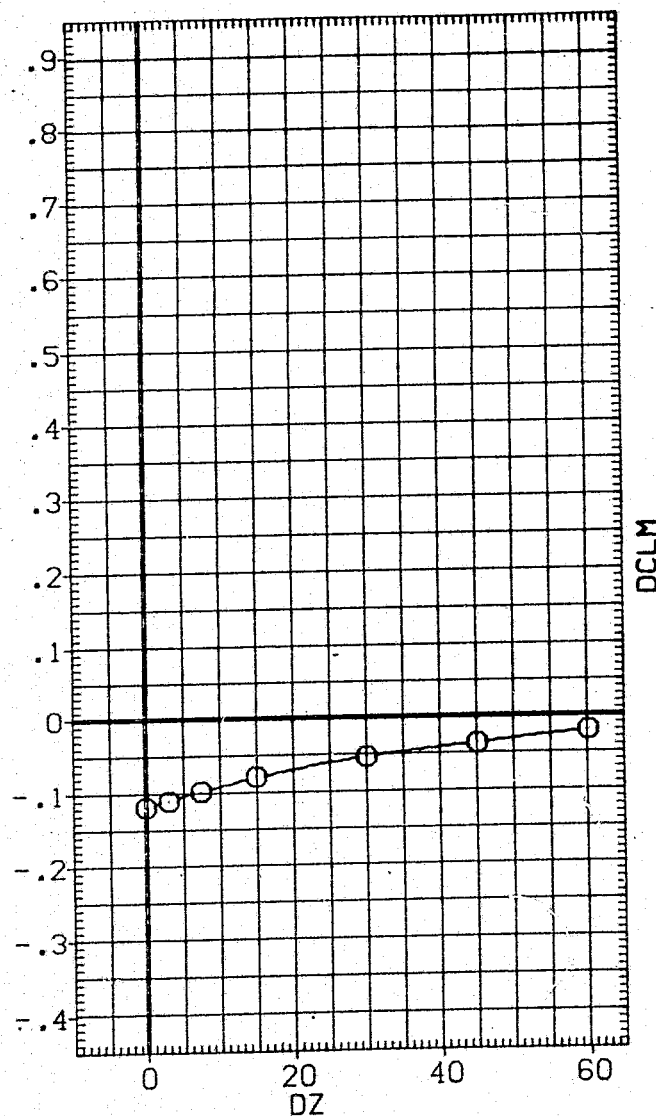
PARAMETRIC VALUES

4.000	BETAC	5.000
.000	ELV-0B	3.000
5.000	MACH	.600
.000	DX	10.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

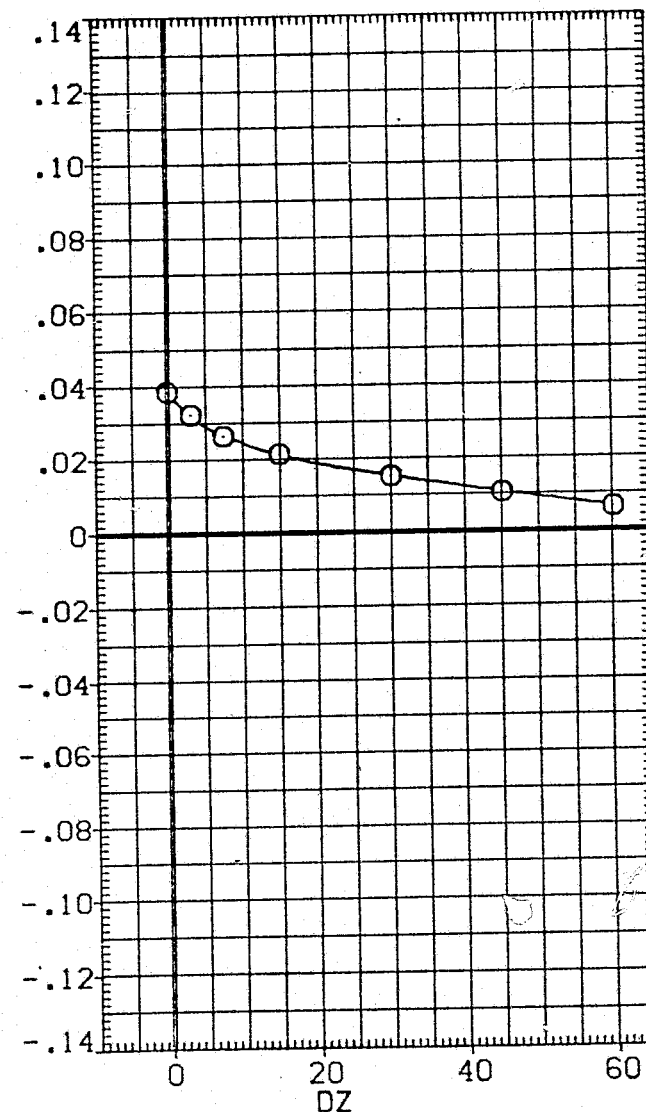


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

SYMBOL
○ALPHA0
10.000ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000	BETAC	5.000
.000	ELV-OB	3.000
5.000	MACH	.600
.000	DX	10.000
10.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

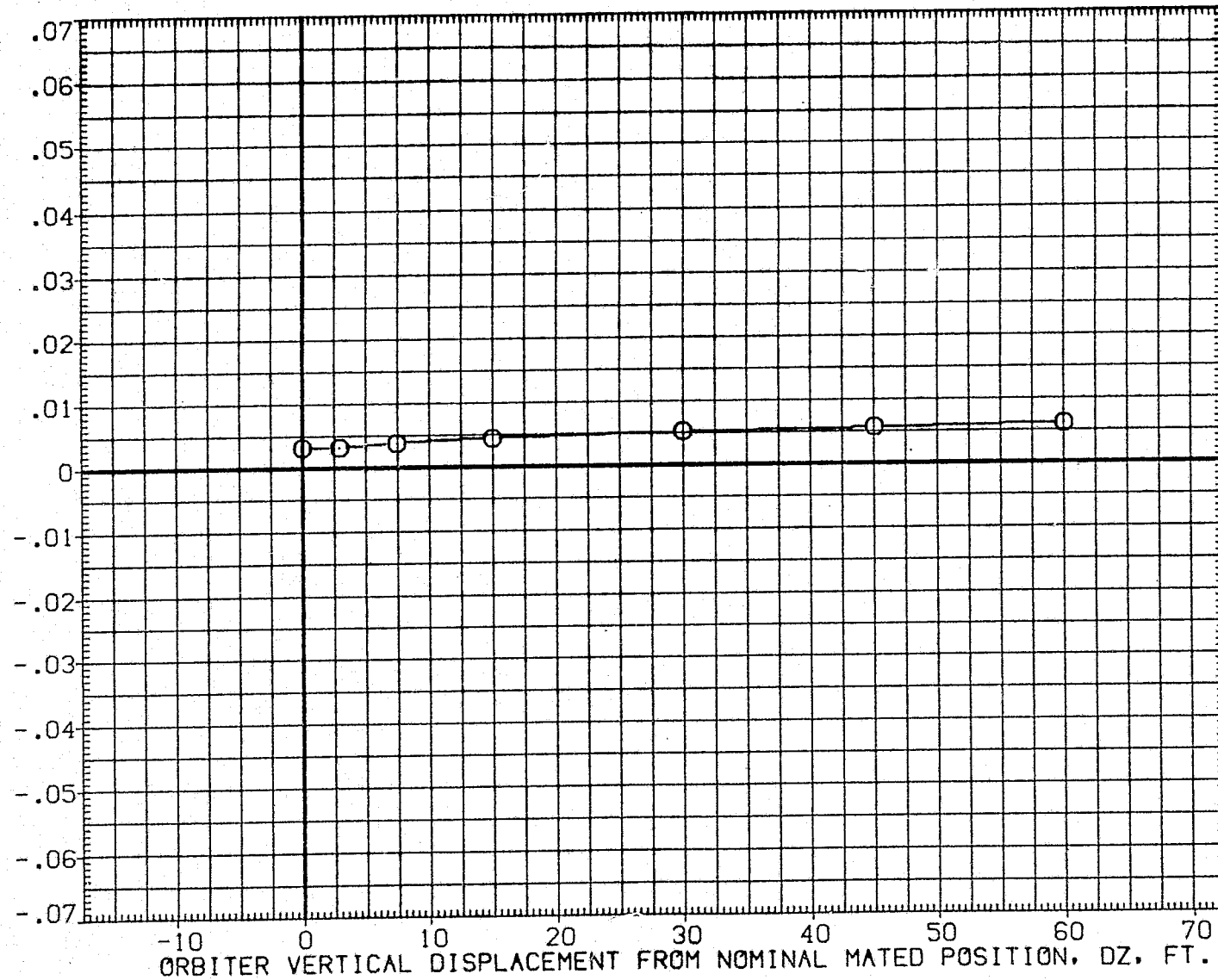


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (140 - 018) (V6N140)

SYMBOL
O

ALPHA0
10.000

ALPHAC
ELV-IB
ELEVON
PHI
DY

PARAMETRIC VALUES

4.000 BETAC 5.000
.000 ELV-OB 3.000
5.000 MACH .600
.000 DX 10.000
10.000 BETA0 .000

REFERENCE INFORMATION

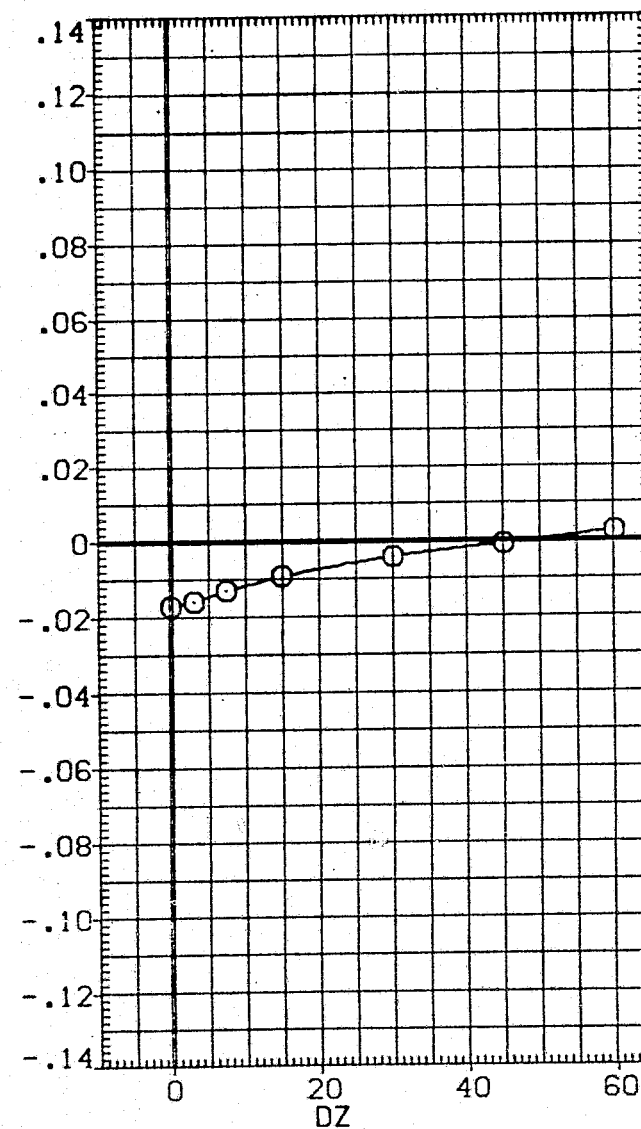
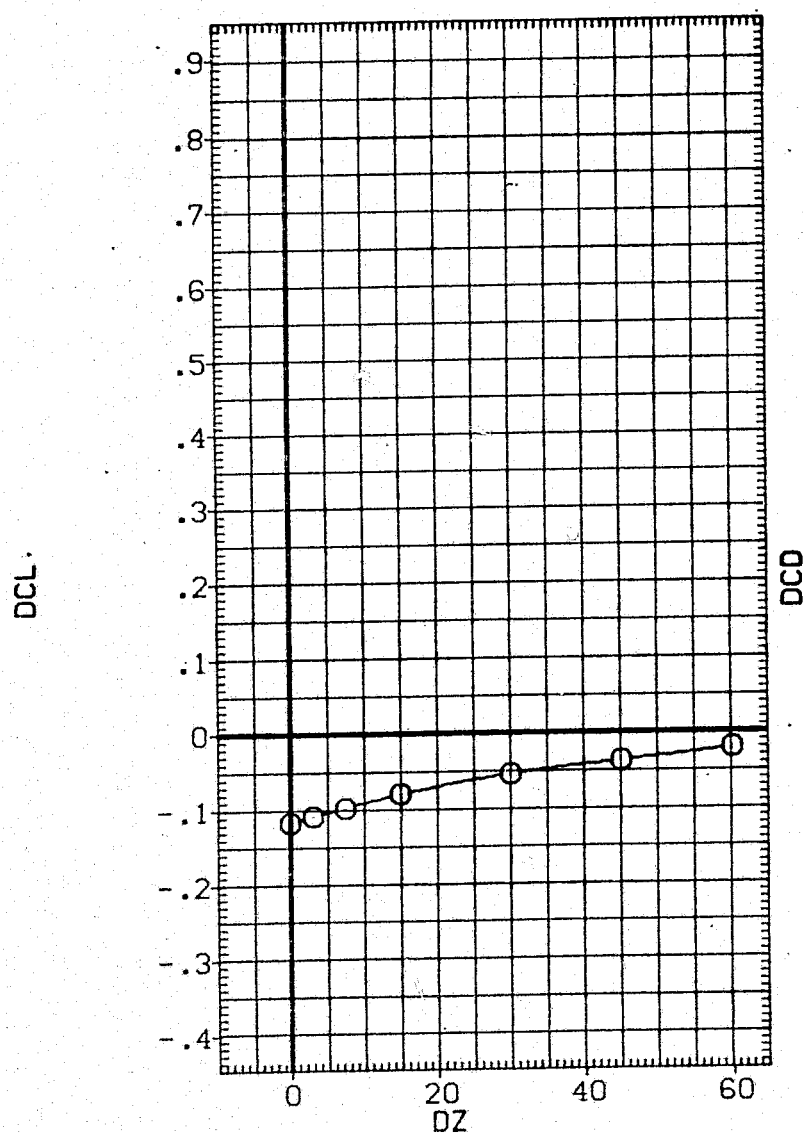
SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN.X0
YMRP .0000 IN.Y0
ZMRP 375.0000 IN.Z0
SCALE .0300


FIG 29 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (02 AT PHI = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN120)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000		.000	.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	-5.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

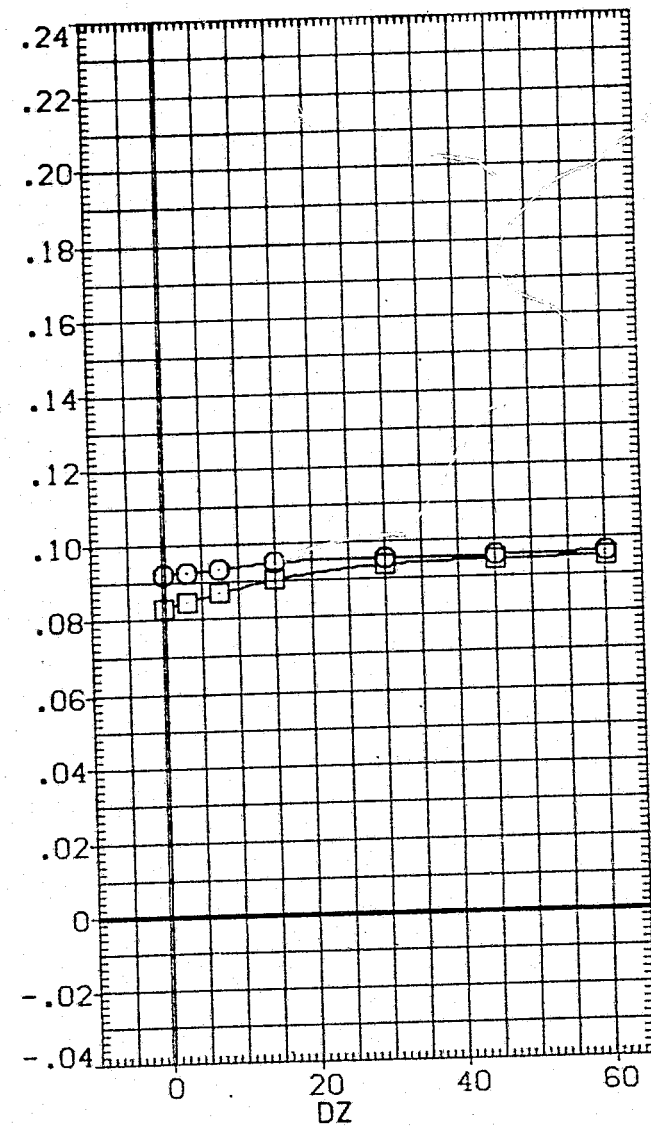
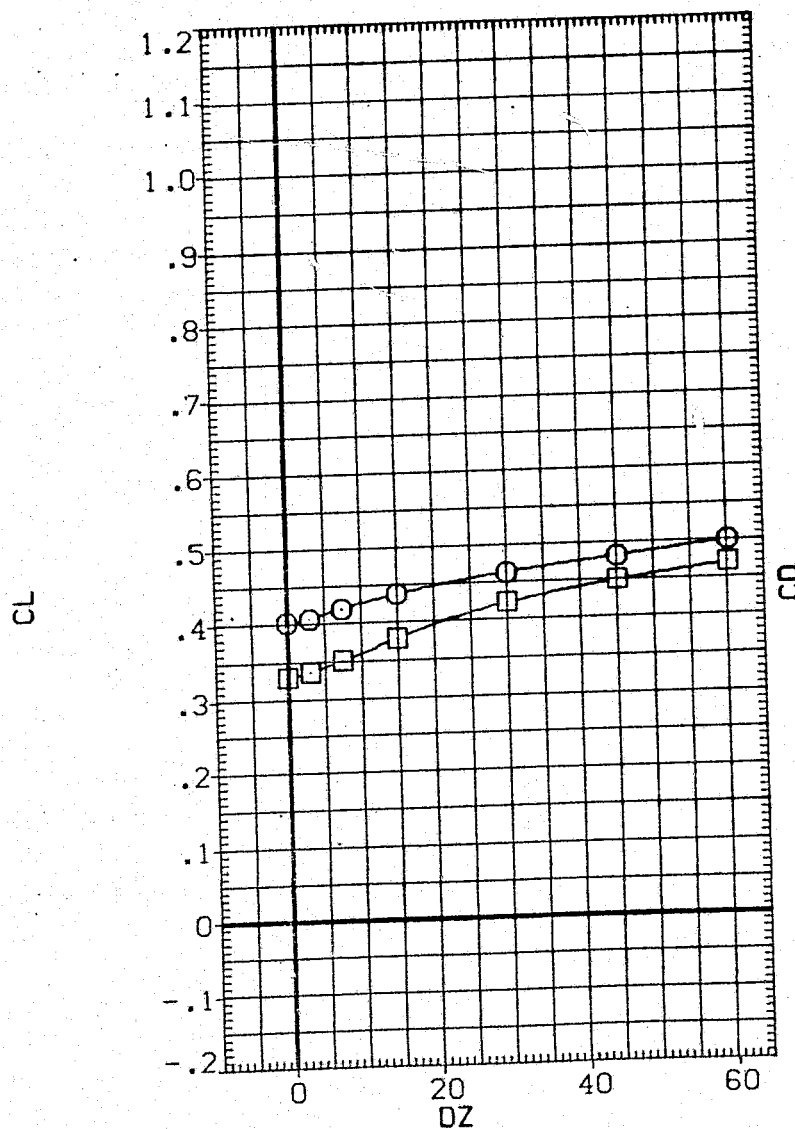


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN120)

SYMBOL

○
□

ALPHA0

10.000

14.000

ELV-18

ELEVON

BETA0

DX

BETAC

PARAMETRIC VALUES

.000

5.000

-5.000

.000

-5.000

ELV-08

MACH

PHI

DY

ALPHAC

.000

.600

.030

10.000

4.000

REFERENCE INFORMATION

SREF

5500.0000

50.FT.

LREF

327.7800

IN.

BREF

2348.0400

IN.

XMRP

1339.9000

IN.XC

YMRP

.0000

IN.YC

ZMRP

190.8000

IN.ZC

SCALE

.0300

PITCHING MOMENT COEFFICIENT, CLM

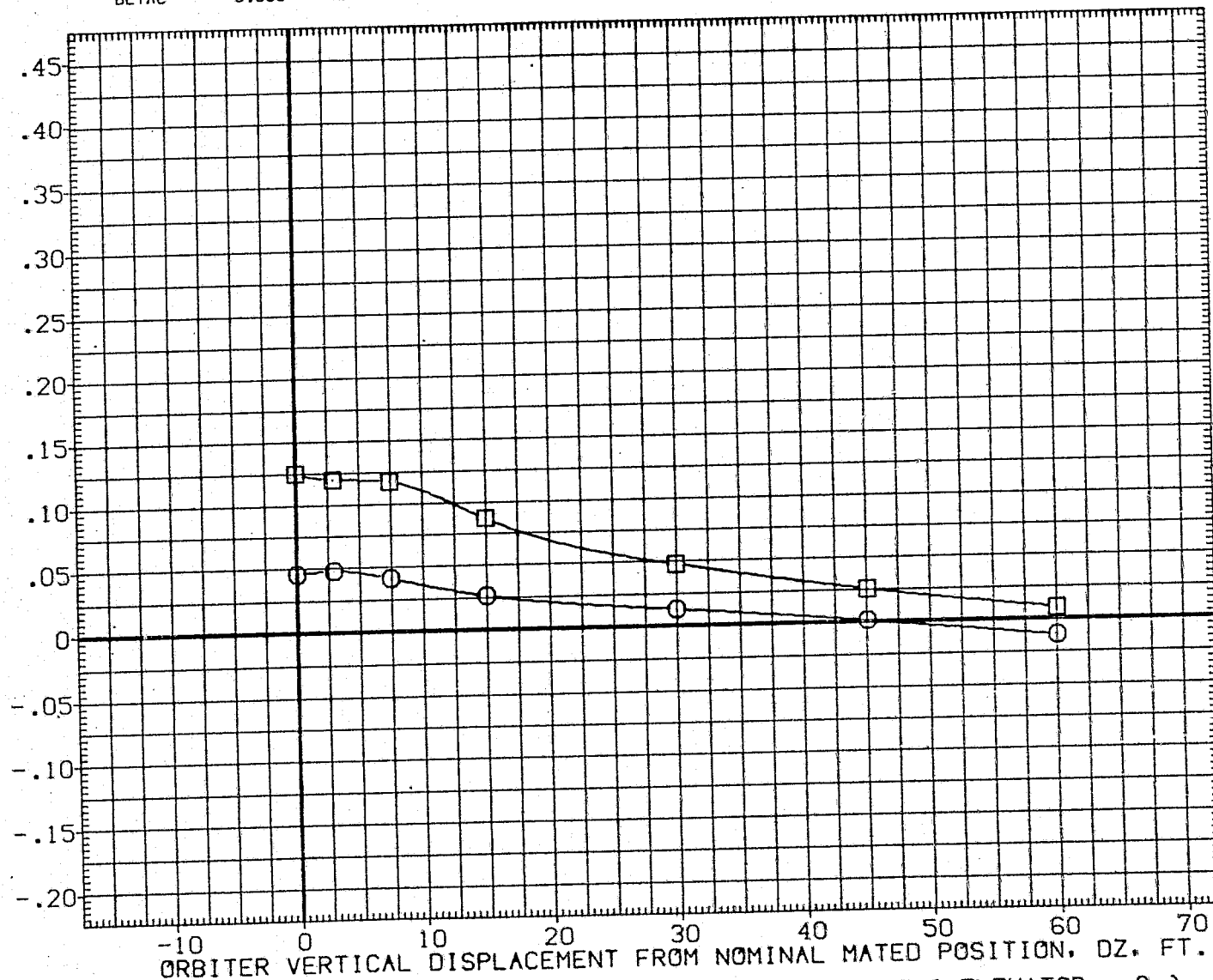


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN120)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC -5.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

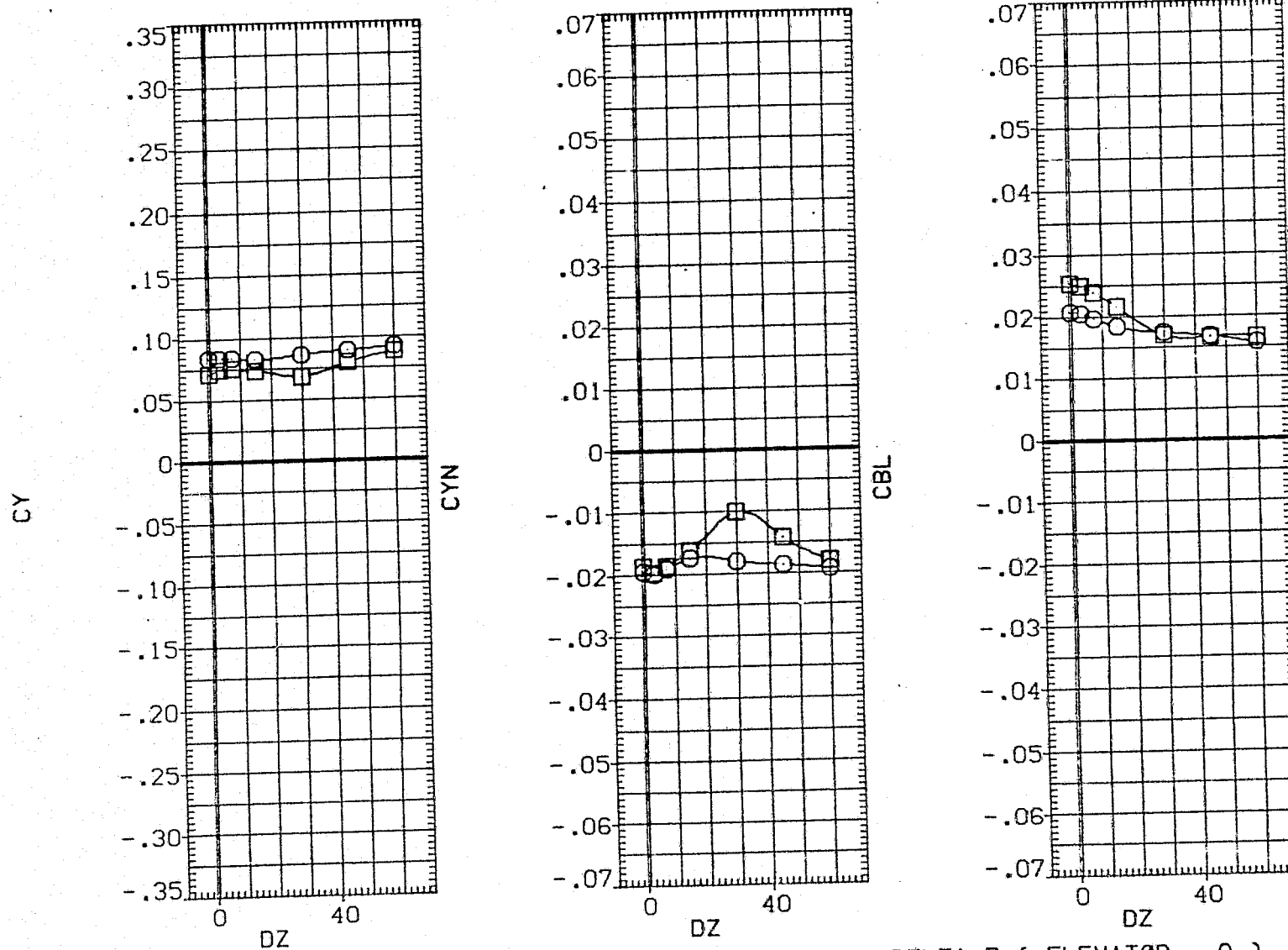


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN120)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-DB
○	10.000	ELEVON	.000	.000
□	14.000	BETA0	5.000	.600
		DX	-5.000	.000
		BETAC	.000	10.000
			PHI	4.000
			ALPHAC	

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

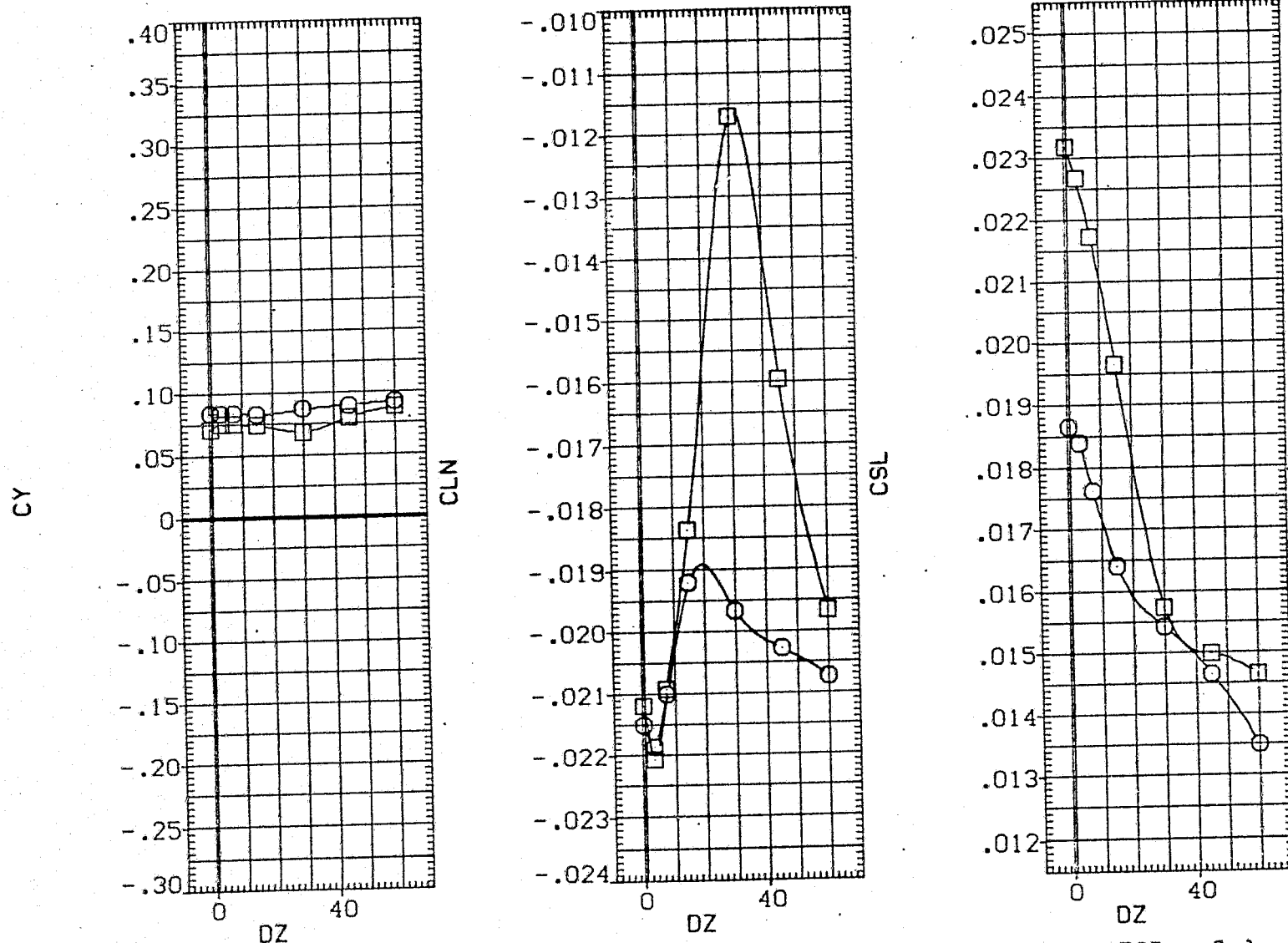


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN121)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	.000	MACH	.600
□	14.000	5.000	PHI	.000
		-5.000	DY	10.000
		.000	ALPHAC	8.000
		-5.000		

REFERENCE INFORMATION		
SREF	5500.000C	SQ.FT.
LREF	327.780C	IN.
BREF	2348.040C	IN.
XMRP	1339.900C	IN.XC
YMRP	.000C	IN.YC
ZMRP	190.800C	IN.ZC
SCALE	.030C	

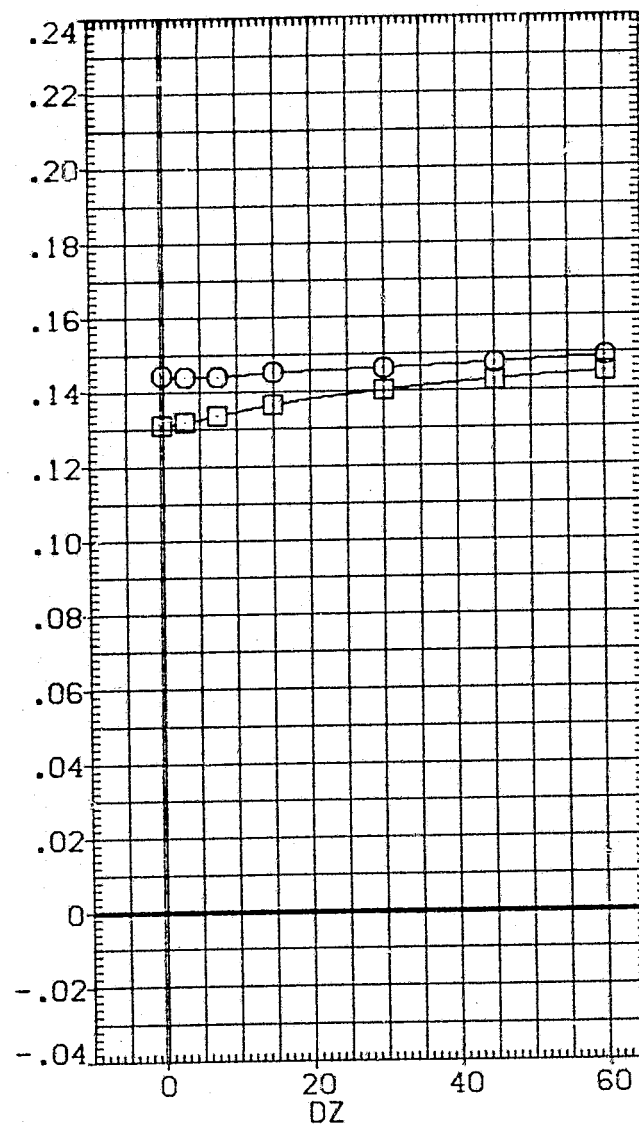
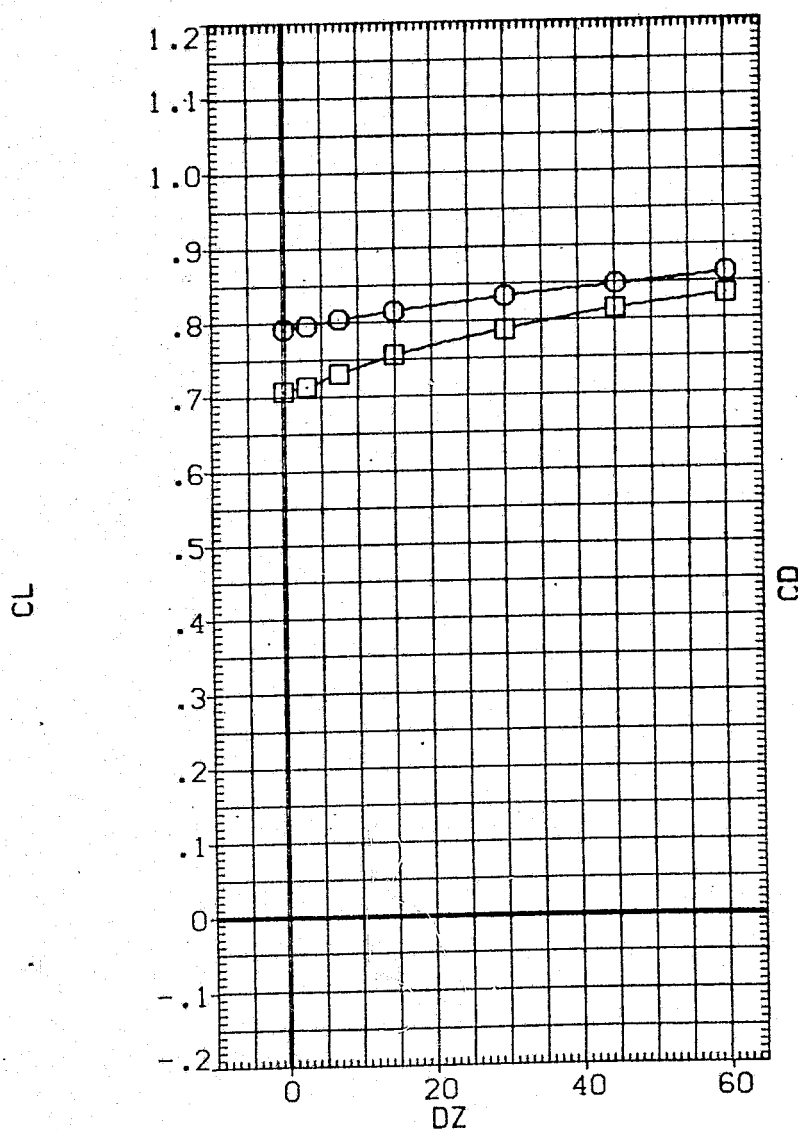


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN121)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC -5.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

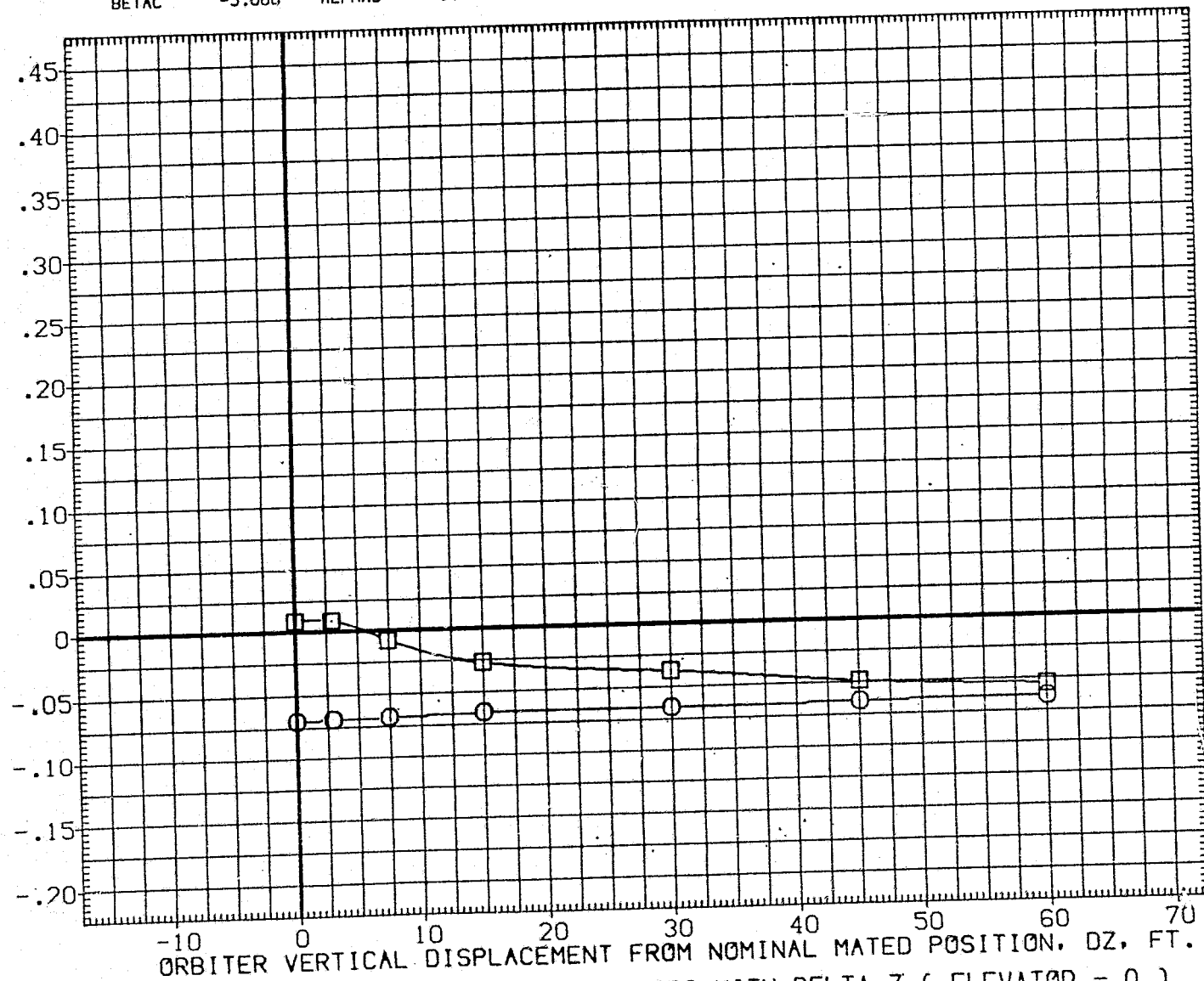


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN121)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000		.000	.000
□	14.000	ELEVON	5.000	MACH
		BETA0	-5.000	PHI
		DX	.000	DY
		BETAC	-5.000	ALPHAC
				8.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

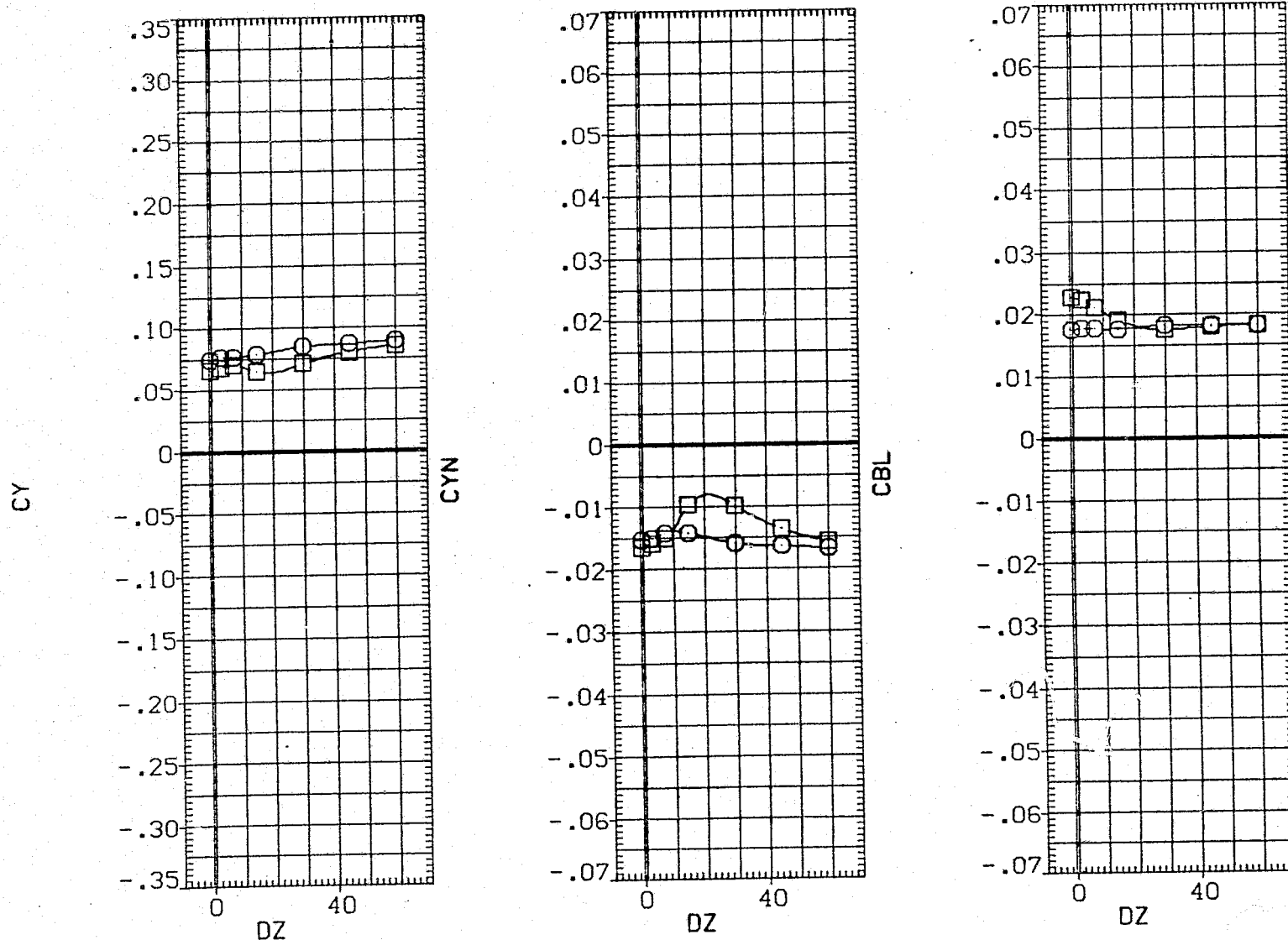


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN121)

SYMBOL	ALPHA0	ELV-IB	PARAMETRIC VALUES	ELV-OB
○	10.000		.000	.000
□	14.000	ELEVON	5.000	MACH
		BETA0	-5.000	PHI
		DX	.000	DY
		BETAC	-5.000	ALPHAC
				8.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

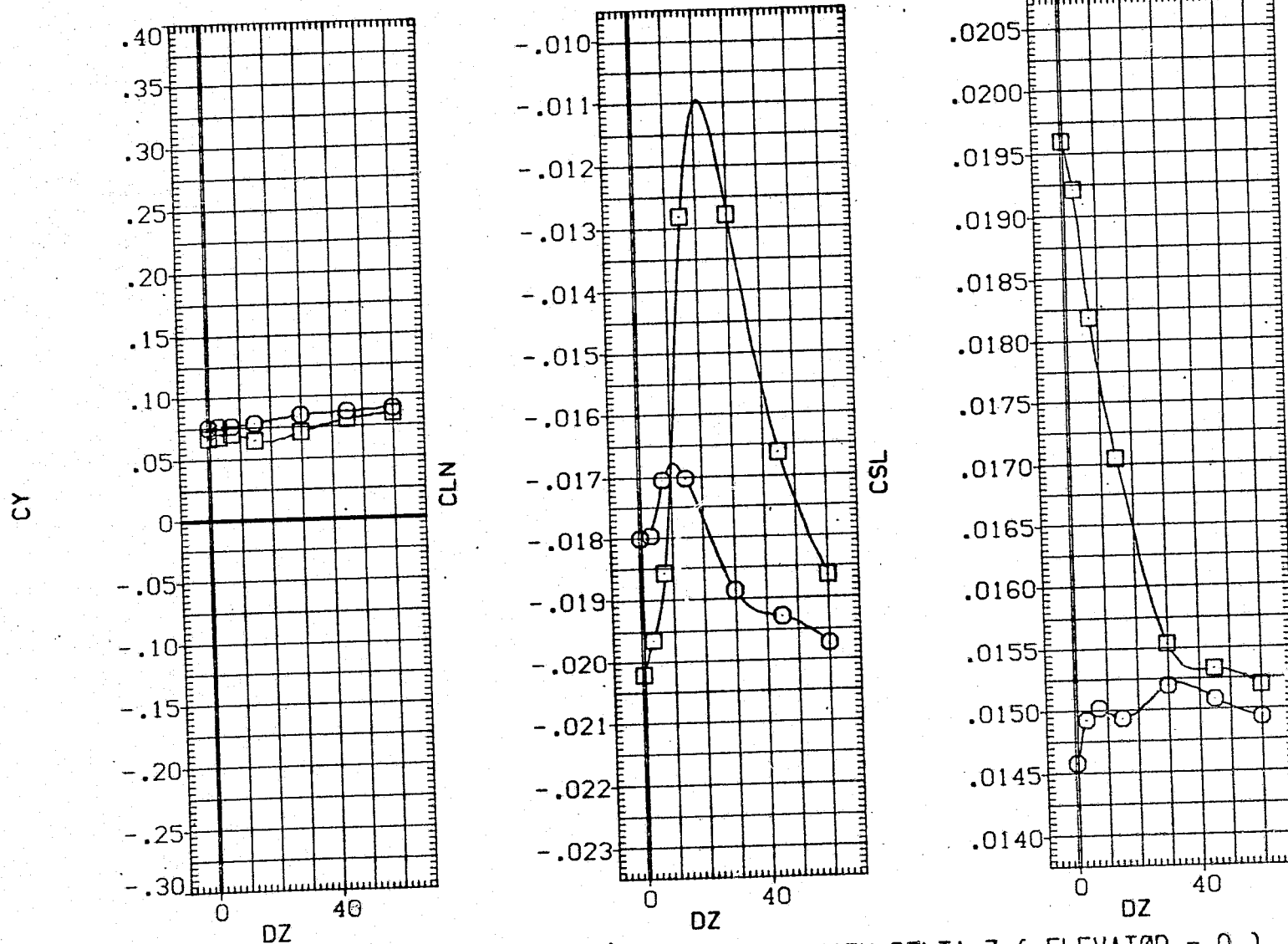


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC .000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

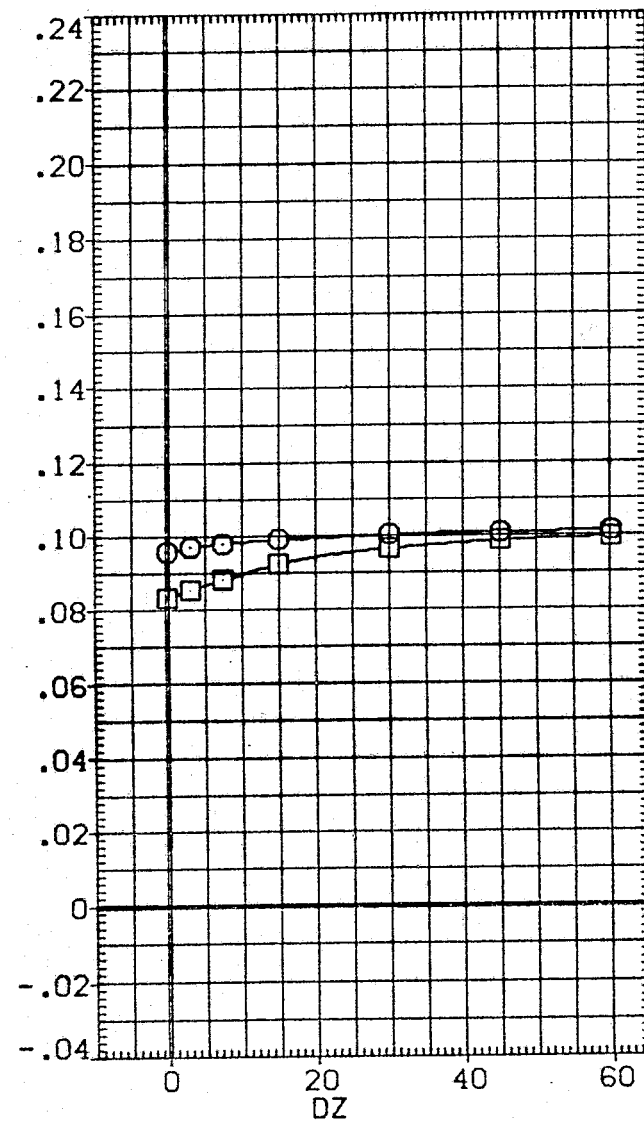
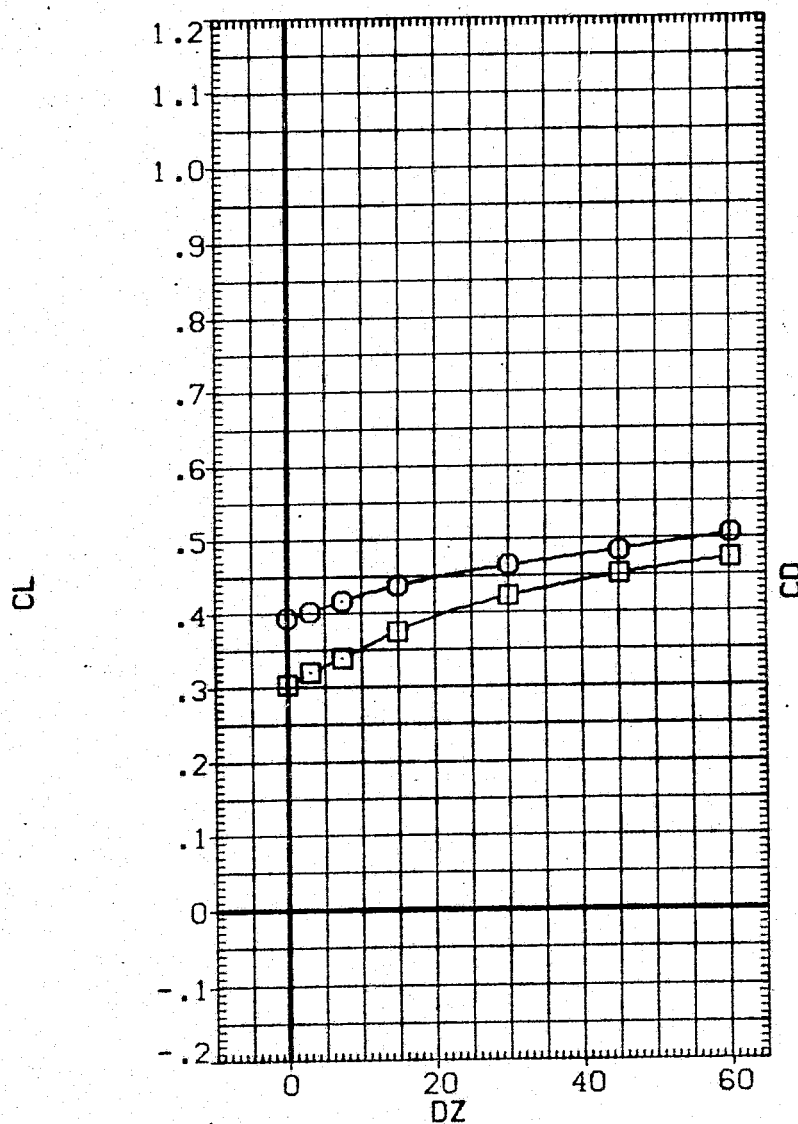


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN122)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XM RP	1339.9000	IN.XC
YM RP	.0000	IN.YC
ZM RP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

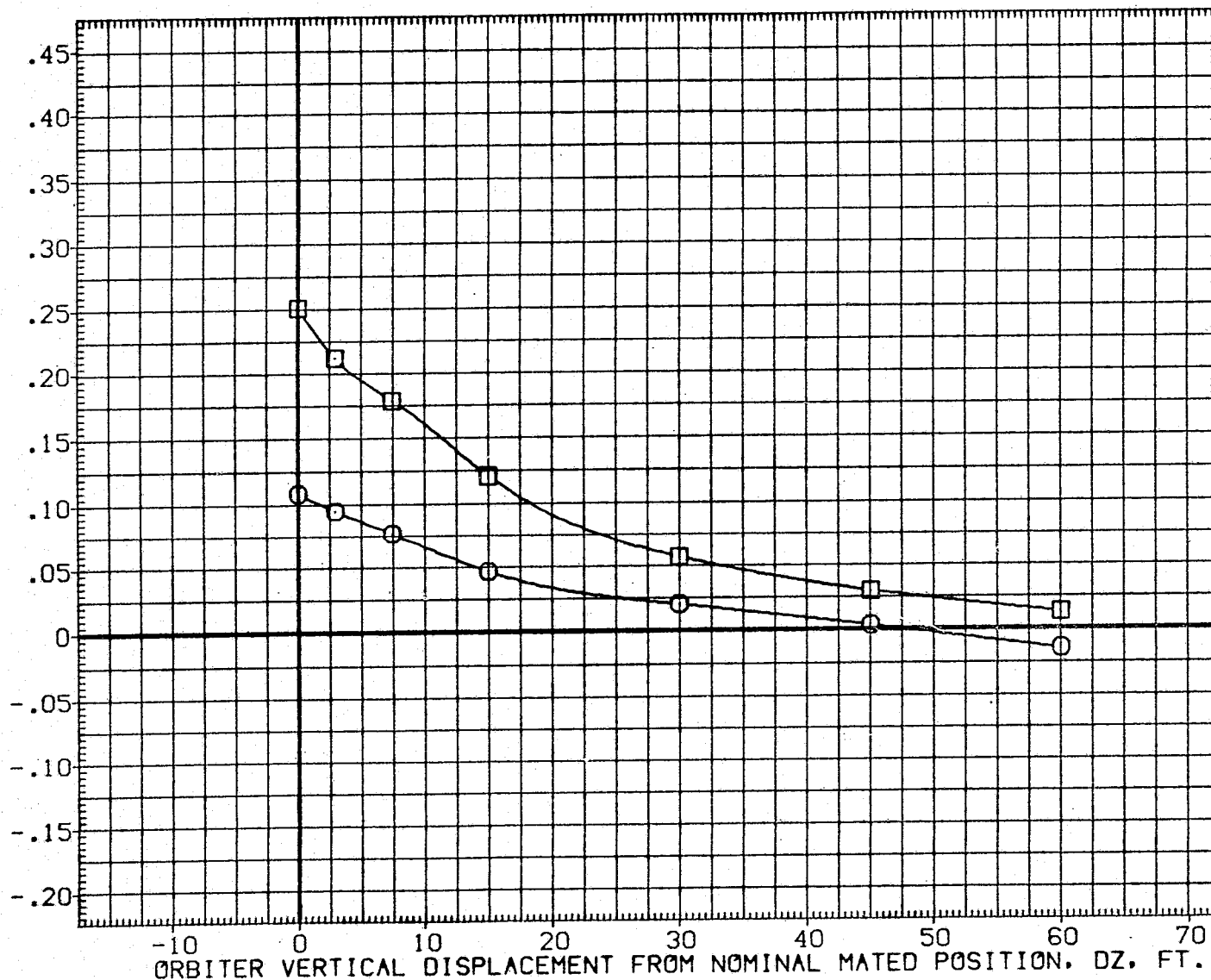


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0		PARAMETRIC VALUES		
○	10.000	ELV-IB	.000	ELV-OB	.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

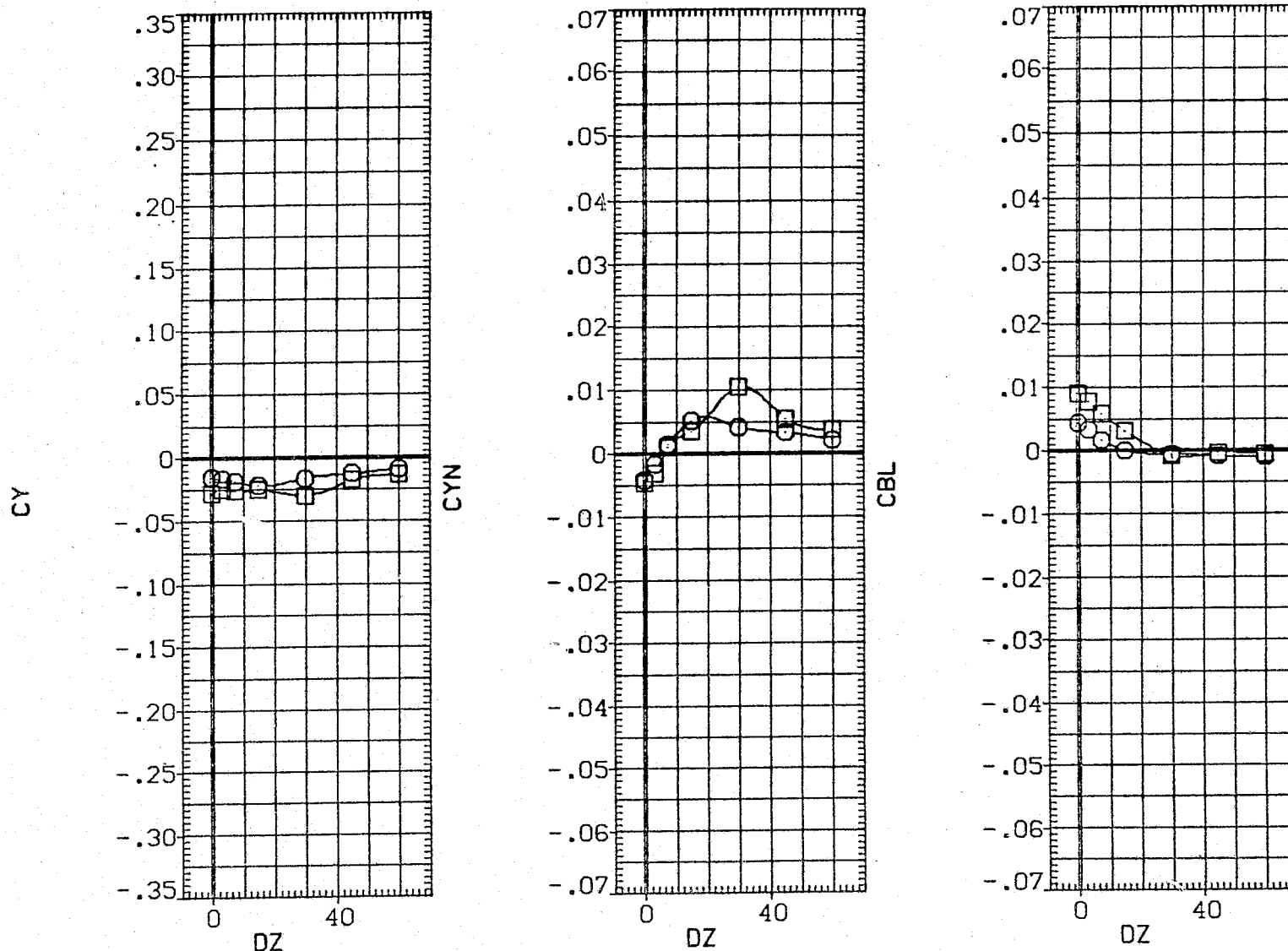


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN122)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	ELEVON	.000	.000
□	14.000	BETA0	5.000	.600
		DX	-5.000	.000
		BETAC	.000	10.000
			ALPHAC	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

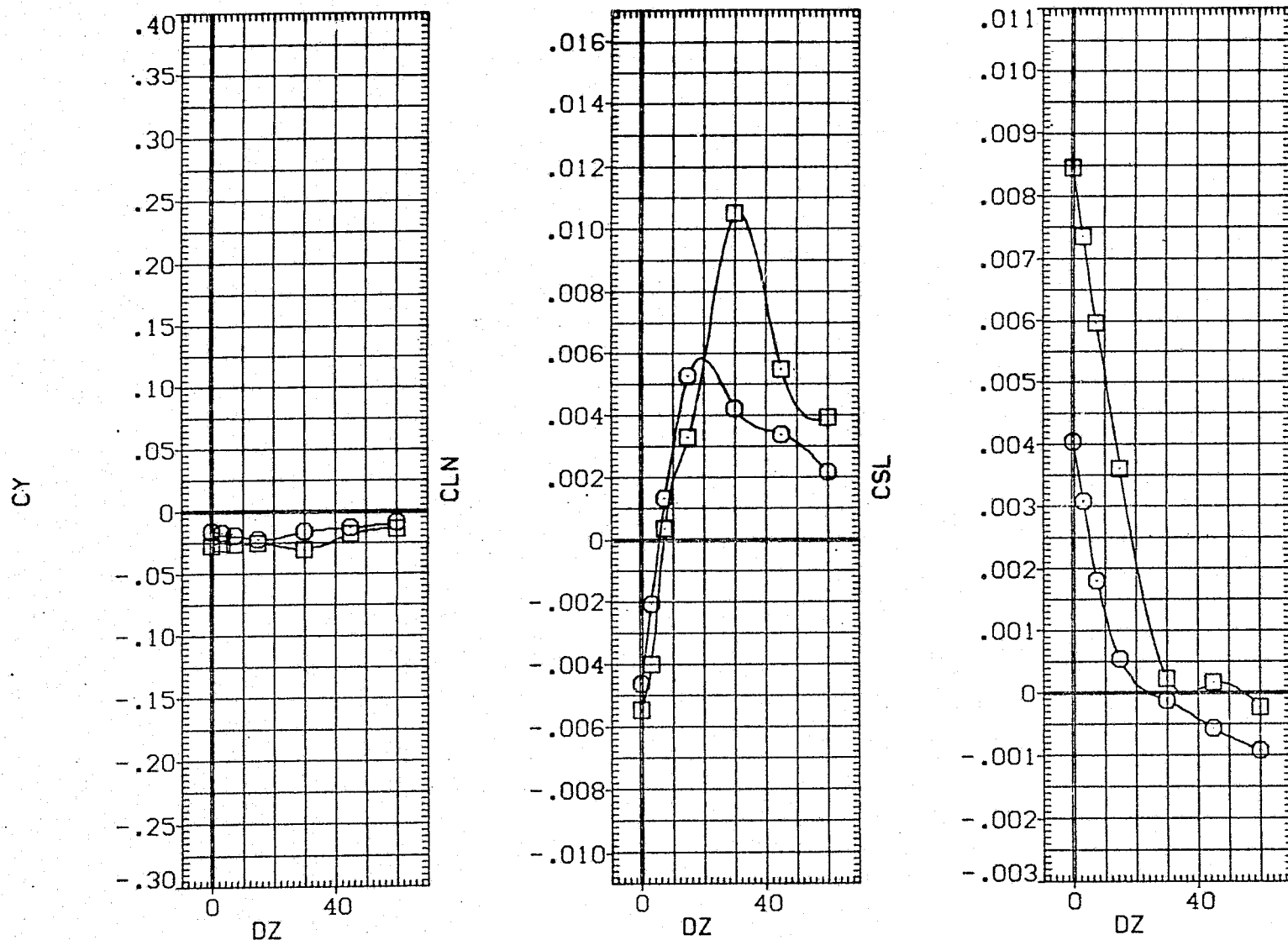


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN123)

SYMBOL	ALPHA0	PARAMETRIC VALUES	ELV-0B	
○	10.000	ELV-1B .000	ELV-0B .000	
□	14.000	ELEVON 5.000	MACH .600	
		BETA0 -5.000	PHI .000	
		DX .000	DY 10.000	
		BETAC .000	ALPHAC 8.000	

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

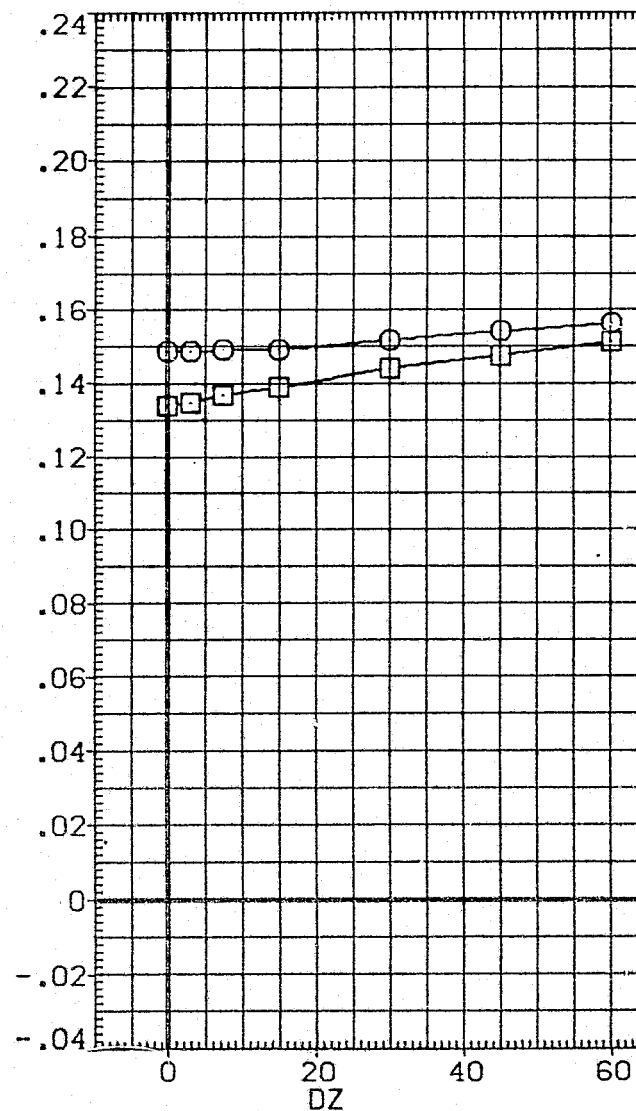
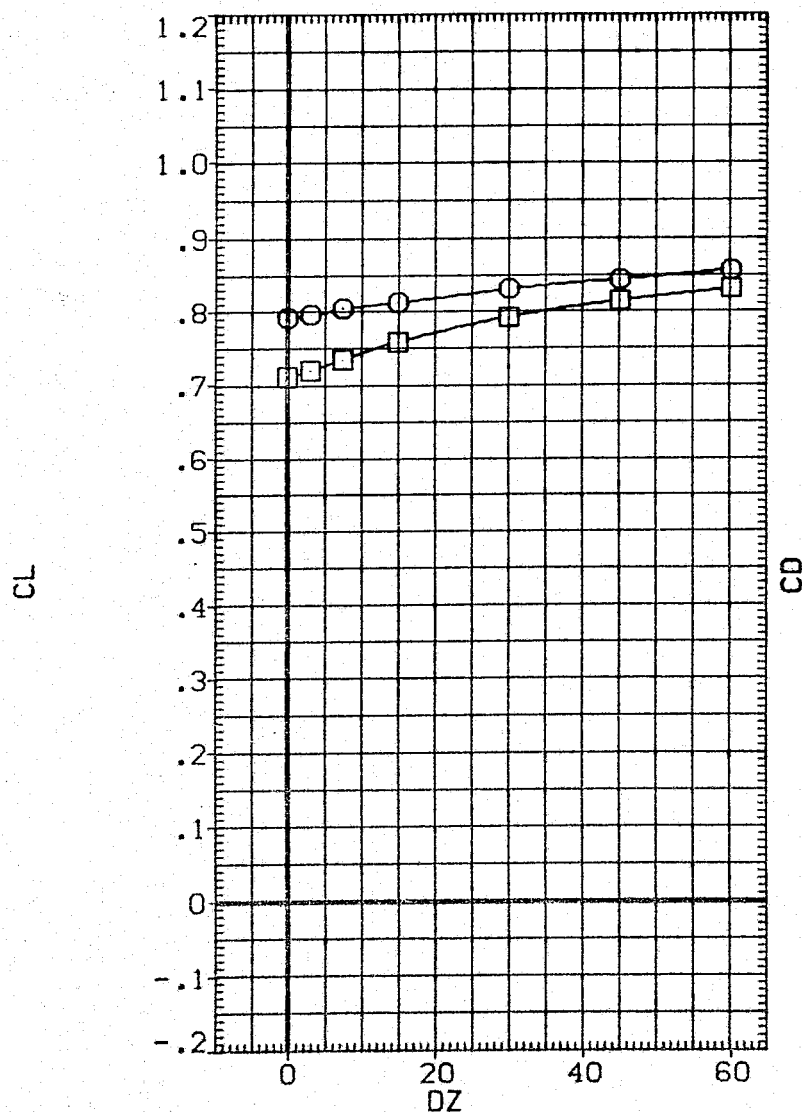


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN123)

SYMBOL

□
○

ALPHA0

10.000

14.000

ELV-1B

ELEVON

BETA0

DX

BETAC

PARAMETRIC VALUES

.000

5.000

-5.000

.000

.000

ELV-0B

MACH

PHI

DY

ALPHAC

.000

.600

.000

10.000

8.000

REFERENCE INFORMATION

SREF 5500.0000

LREF 327.7800

BREF 2348.0400

XMRP 1339.9000

YMRP .0000

ZMRP 190.8000

SCALE .0300

SQ.FT.

IN.

IN.

IN.XC

IN.YC

IN.ZC

PITCHING MOMENT COEFFICIENT, CLM

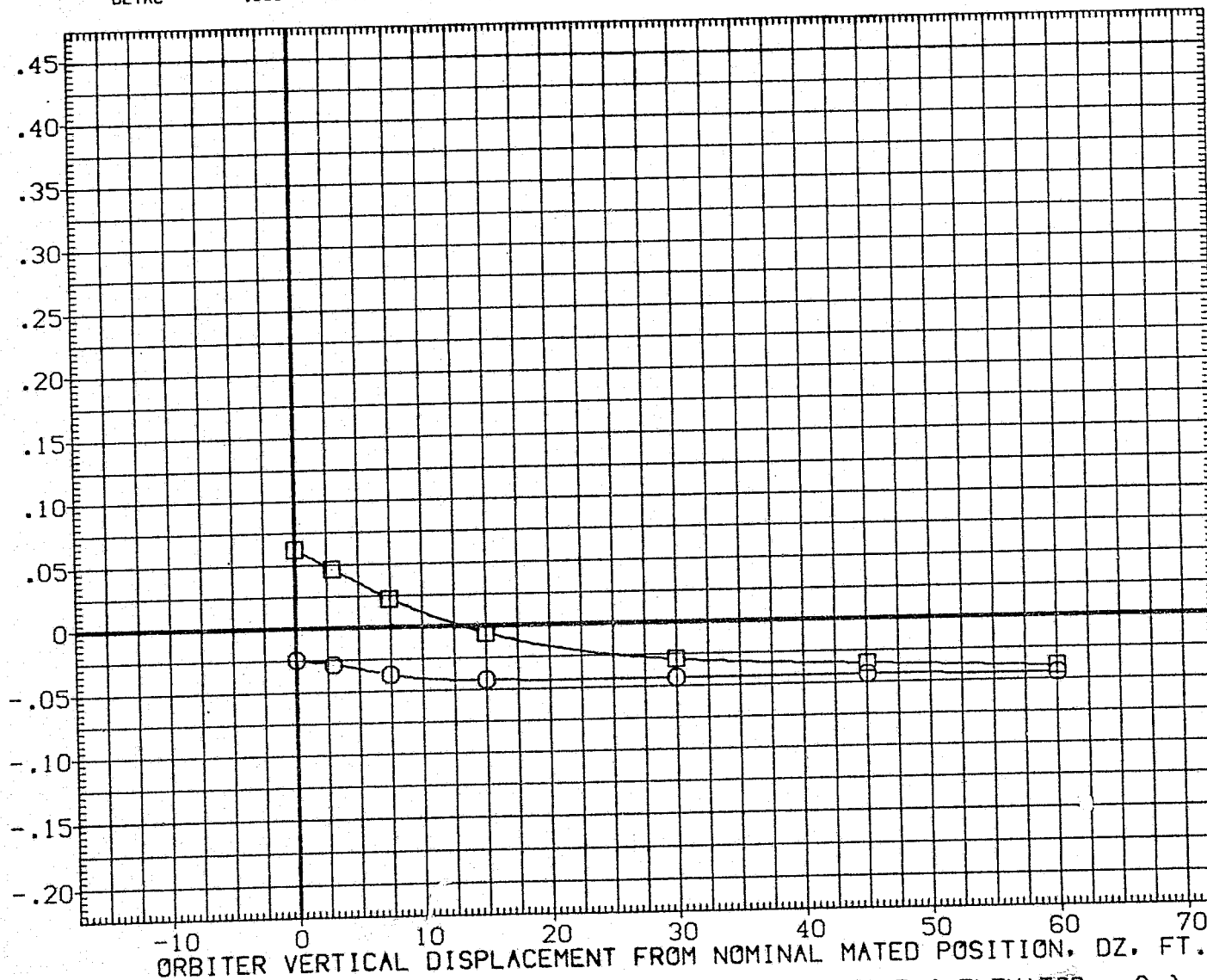


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN123)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B	
○	10.000	ELEVON	.000	MACH	.000
□	14.000	BETA0	5.000	PHI	.600
		DX	-5.000	DY	.000
		BETAC	.000	ALPHAC	10.000
					8.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

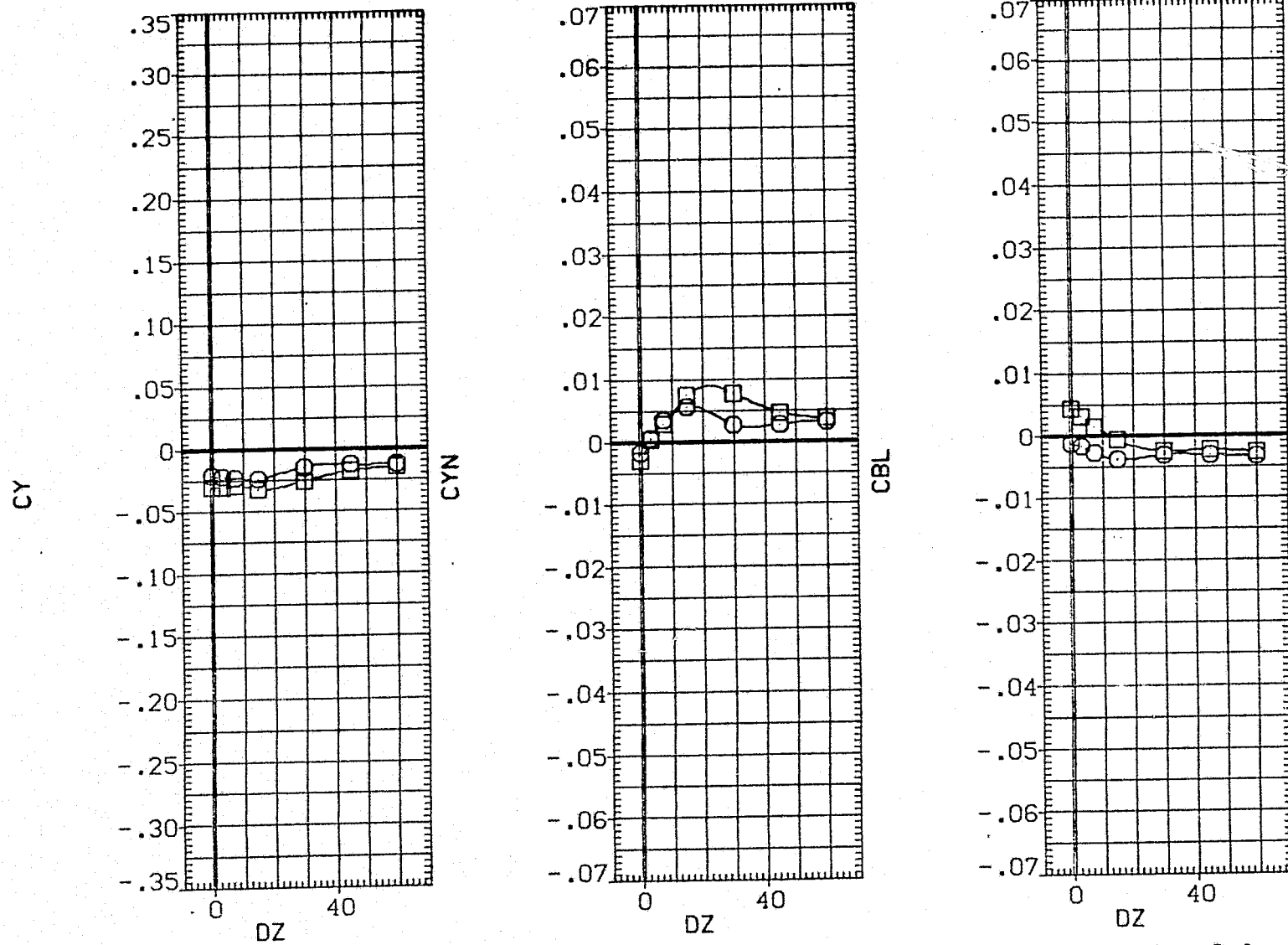


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN123)

SYMBOL	ALPHA0		PARAMETRIC VALUES		
○	10.000	ELV-1B	.000	ELV-0B	.000
□	14.000	ELEV0N	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRF	1339.9000	IN.XC
YMRF	.0000	IN.YC
ZMRF	190.8000	IN.ZC
SCALE	.0300	

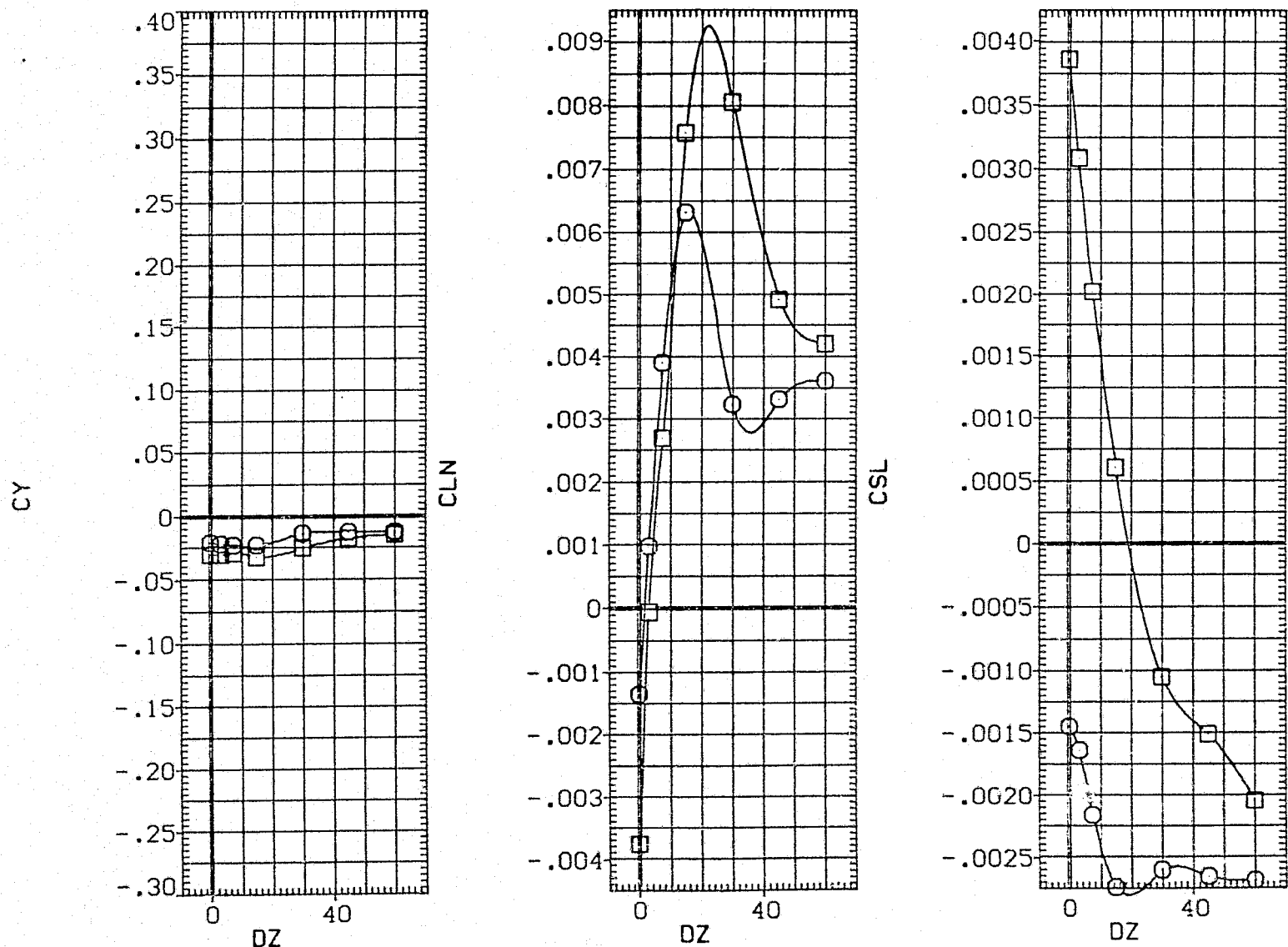


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA(MGN124)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-18 .000 ELV-08 .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC 5.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

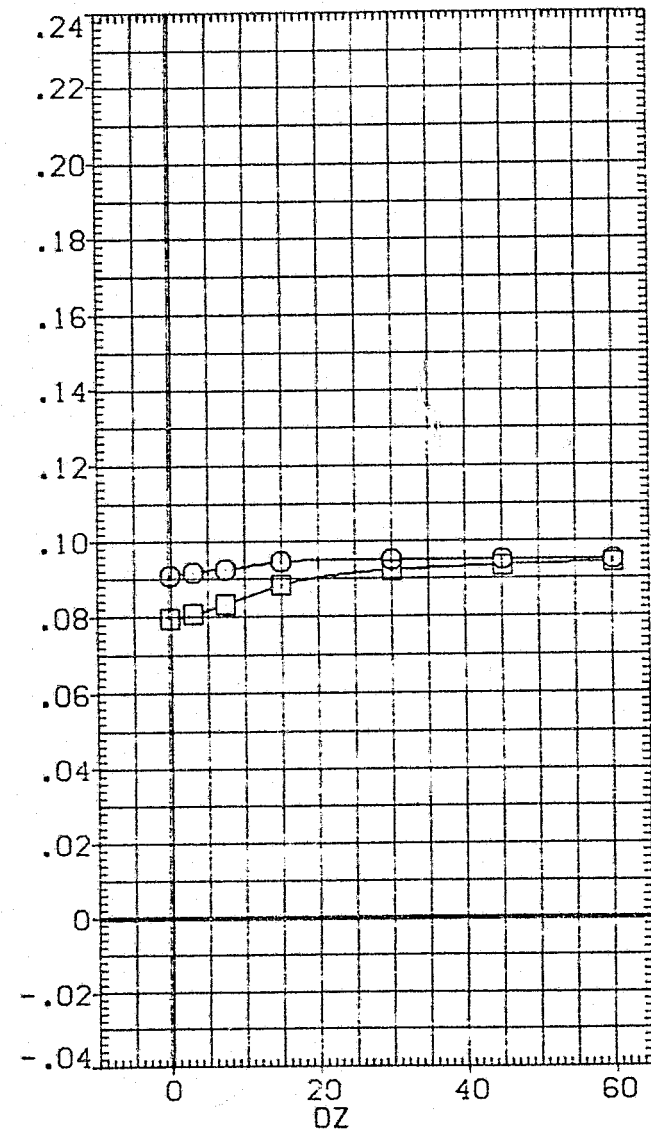
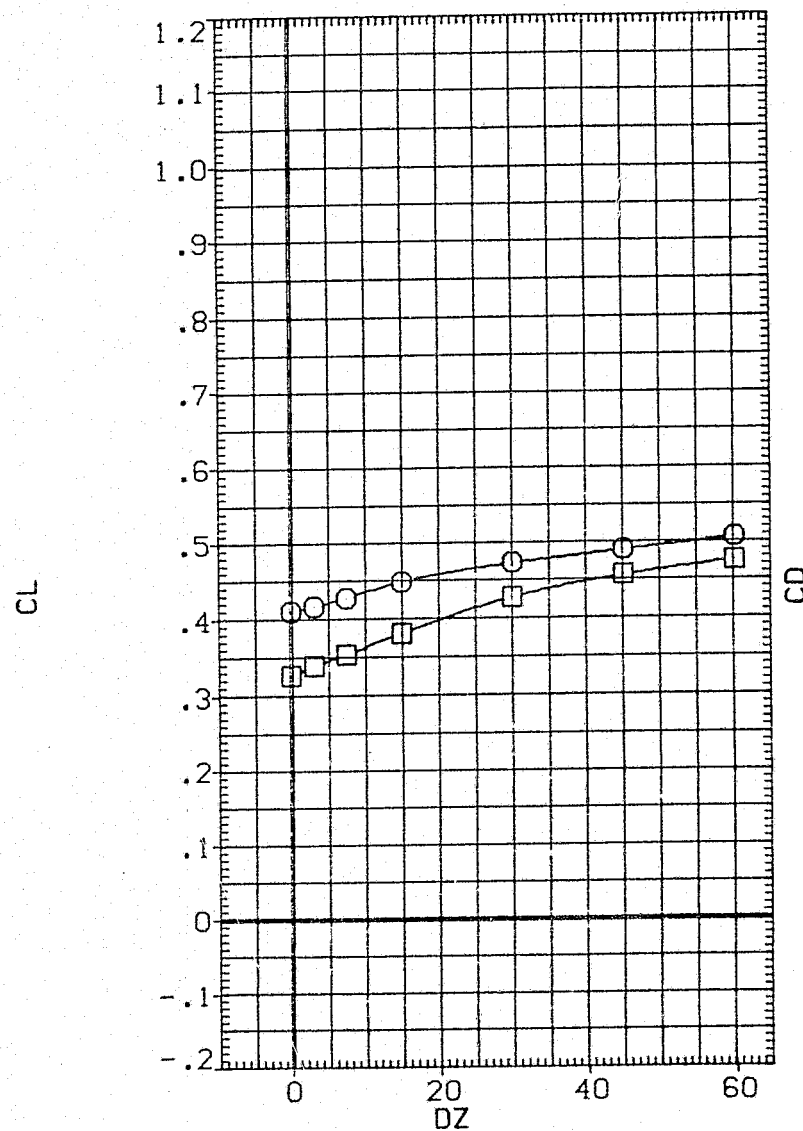


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN124)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC 5.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

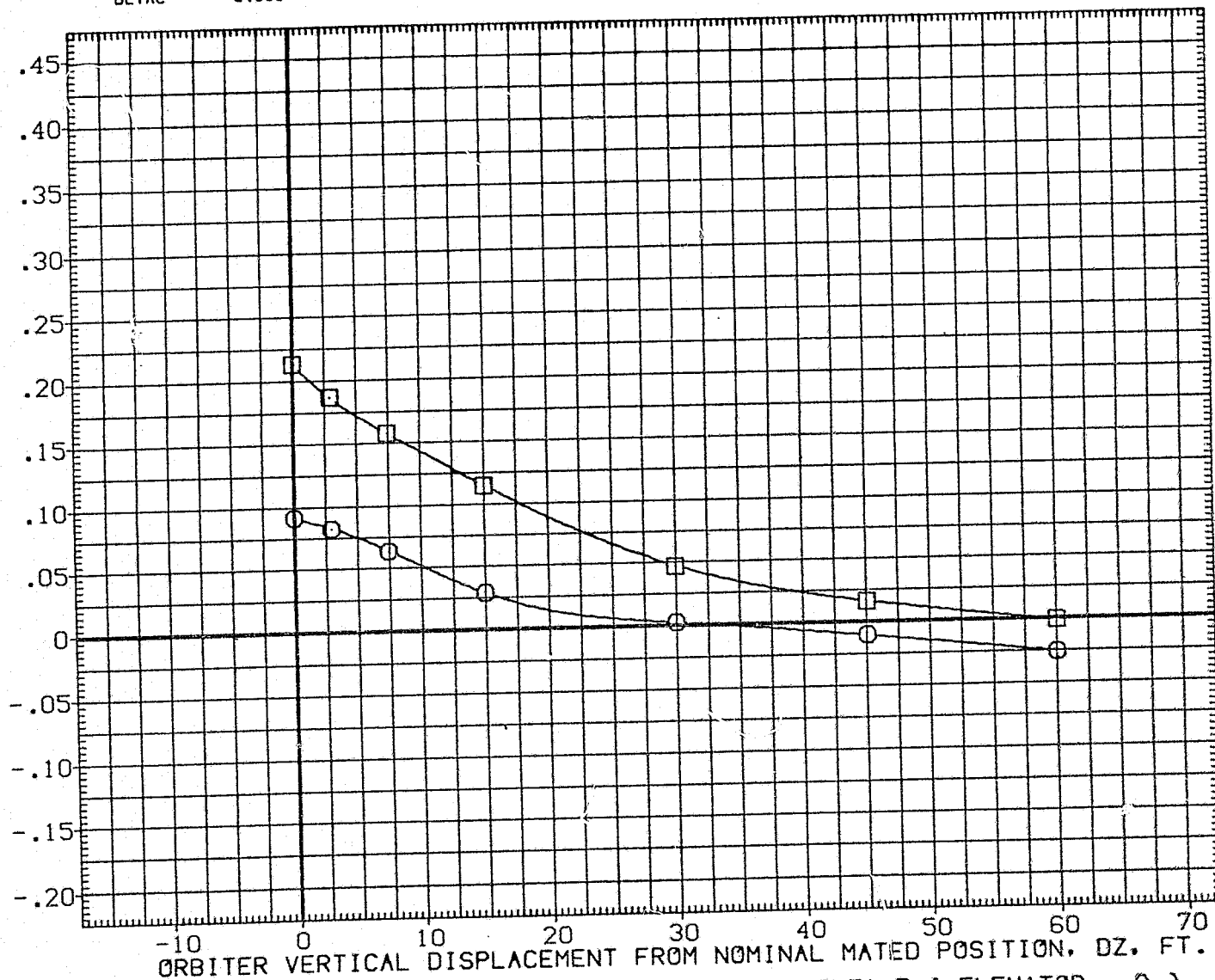


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN124)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000		.000	.000
□	14.000	ELEVON	5.000	MACH
		BETA0	-5.000	PHI
		DX	.000	DY
		BETAC	5.000	ALPHAC
				4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

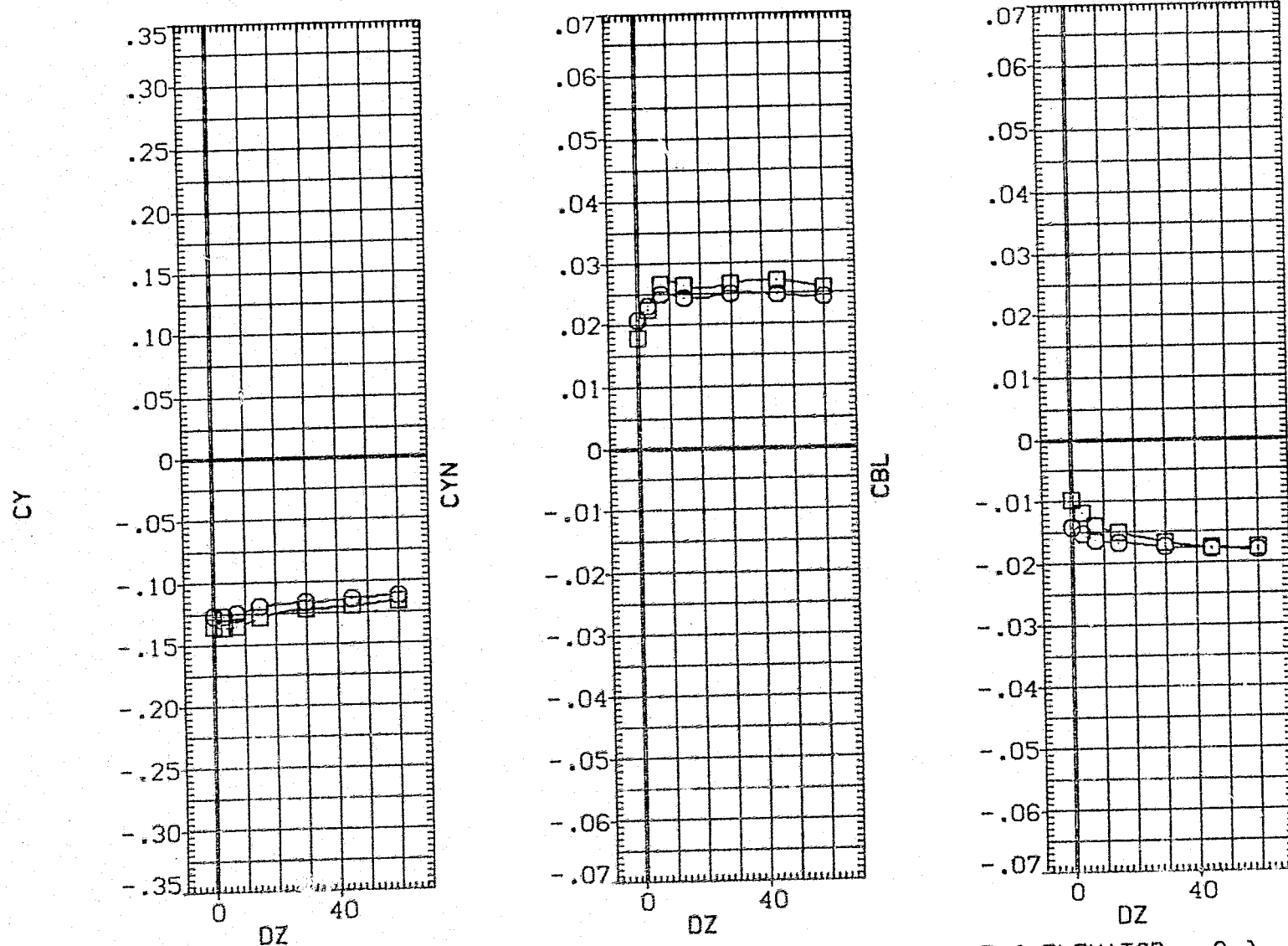


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN124)

SYMBOL	ALPHA	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000		.000	.000
□	14.000	ELEVON	5.000	MACH
		BETA0	-5.000	PHI
		DX	.000	DY
		BETAC	5.000	ALPHAC
				10.000
				4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

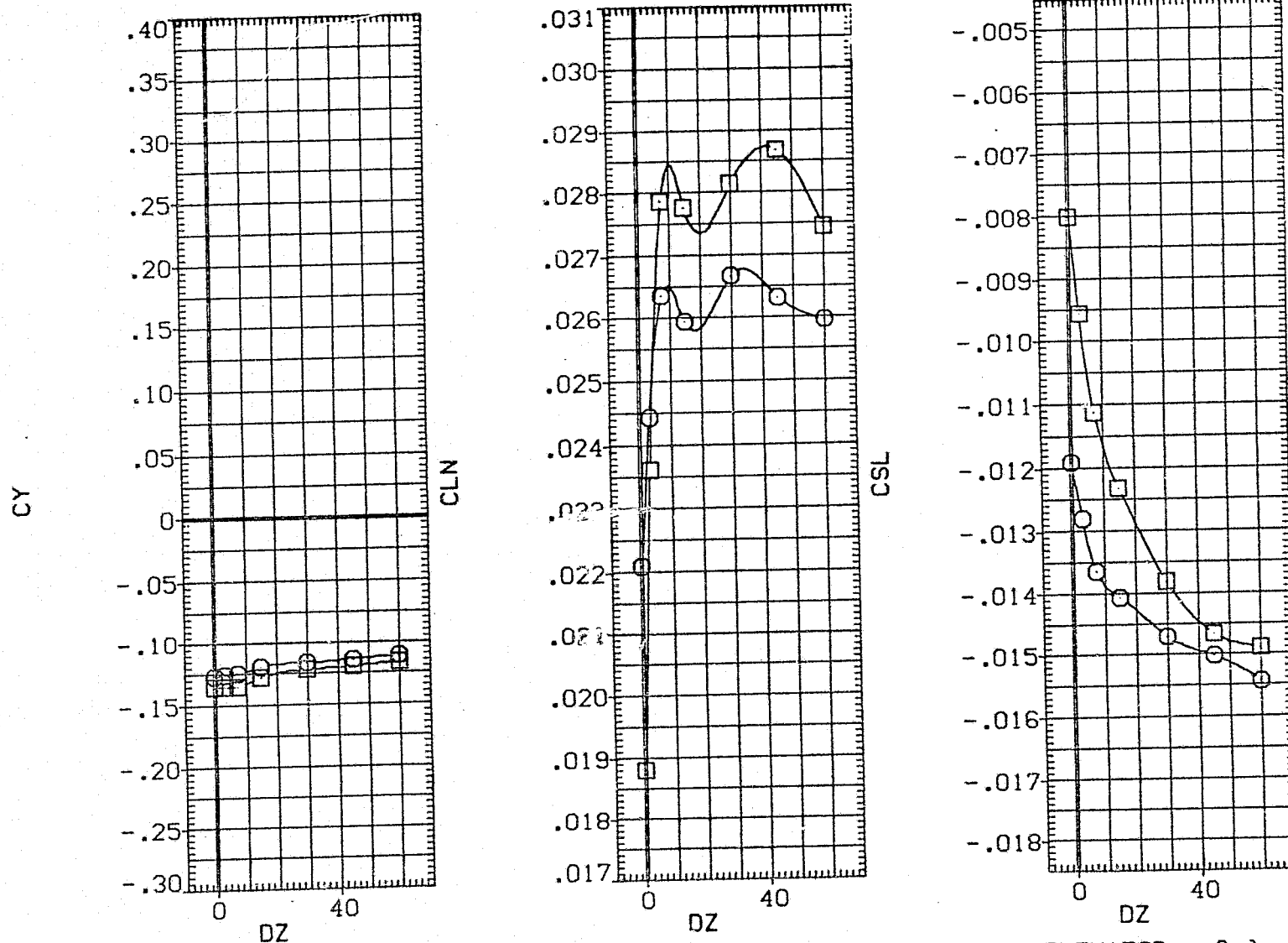


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN125)

SYMBOL	ALPHA0	PARAMETRIC VALUES		
○	10.000	ELV-1B .000	ELV-0B .000	
□	14.000	ELEVON 5.000	MACH .600	
		BETA0 -5.000	PHI .000	
		DX .000	DY 10.000	
		BETAC 5.000	ALPHAC 8.000	

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7900	IN.
BREF	2348.0400	IN.
XMRF	1339.9000	IN.XC
YMRF	.0000	IN.YC
ZMRF	190.8000	IN.ZC
SCALE	.0300	

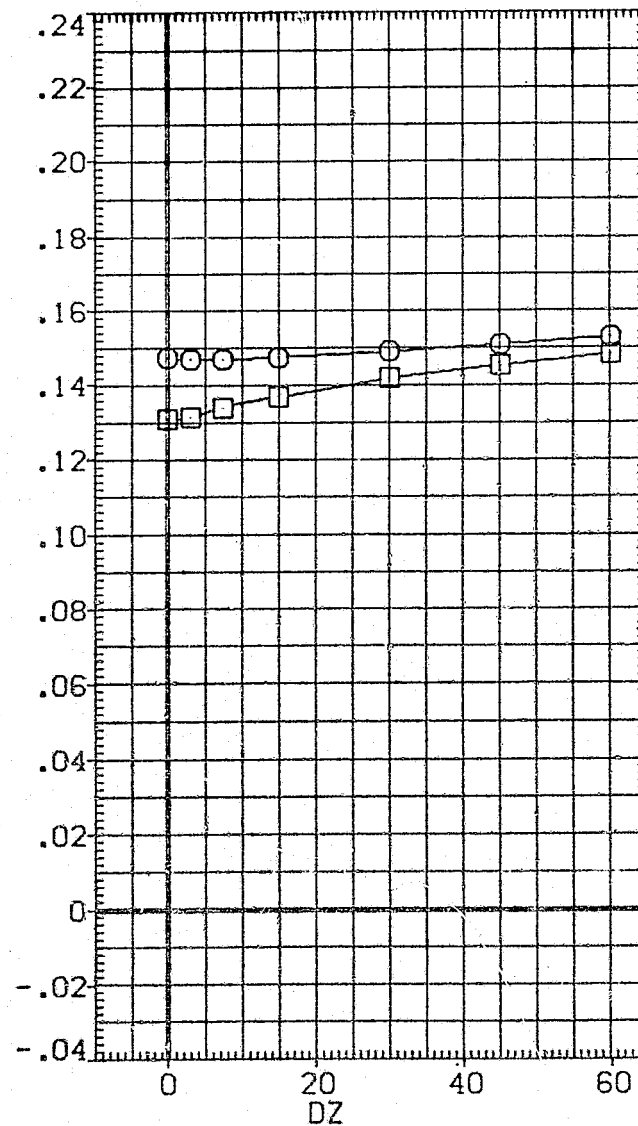
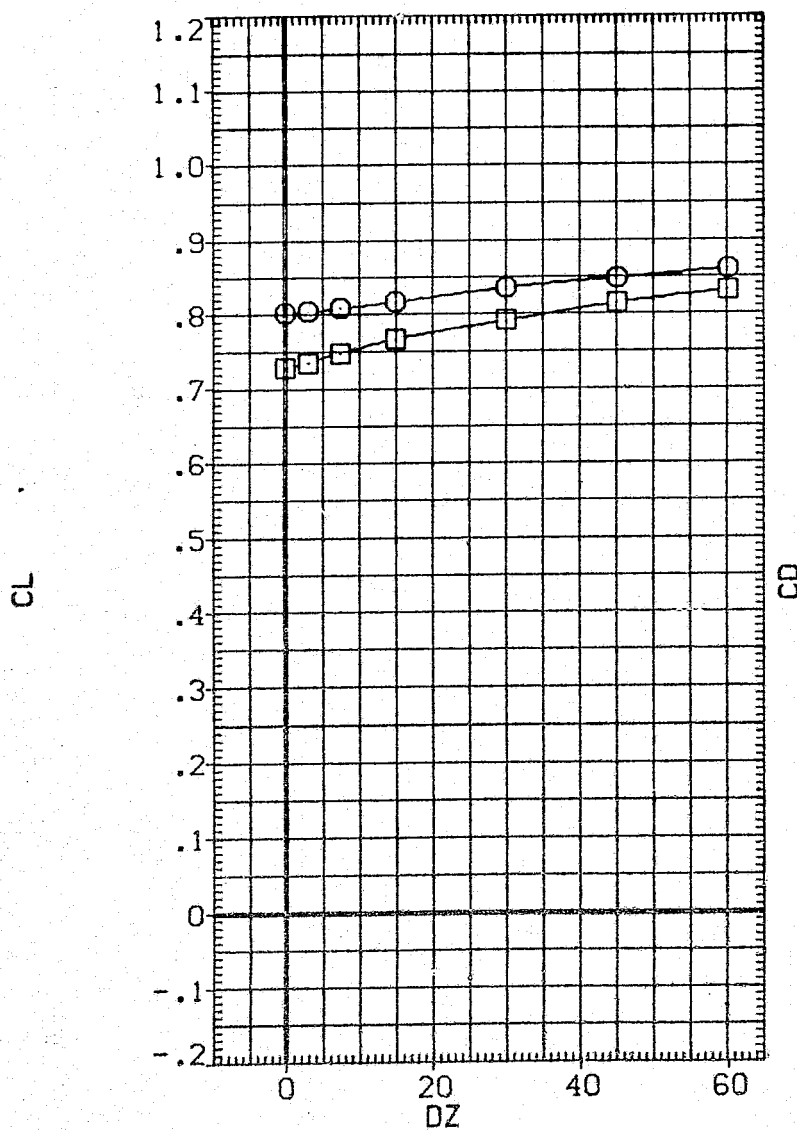


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA(MGN125)

SYMBOL

○

□

ALPHA0

10.000

ELV-1B

PARAMETRIC VALUES

.000

ELV-0B

.000

14.000

ELEVON

5.000

MACH

.600

BETA0

-5.000

PHI

.000

DY

.000

DY

10.000

META

5.000

ALPHAC

8.000

REFERENCE INFORMATION

SREF

5500.0000

50. FT.

LREF

327.7800

IN.

BREF

2348.0400

IN.

XMRP

1339.9000

IN.XC

YMRP

.0000

IN.YC

ZMRP

190.8000

IN.ZC

SCALE

.0300

PITCHING MOMENT COEFFICIENT, CLM

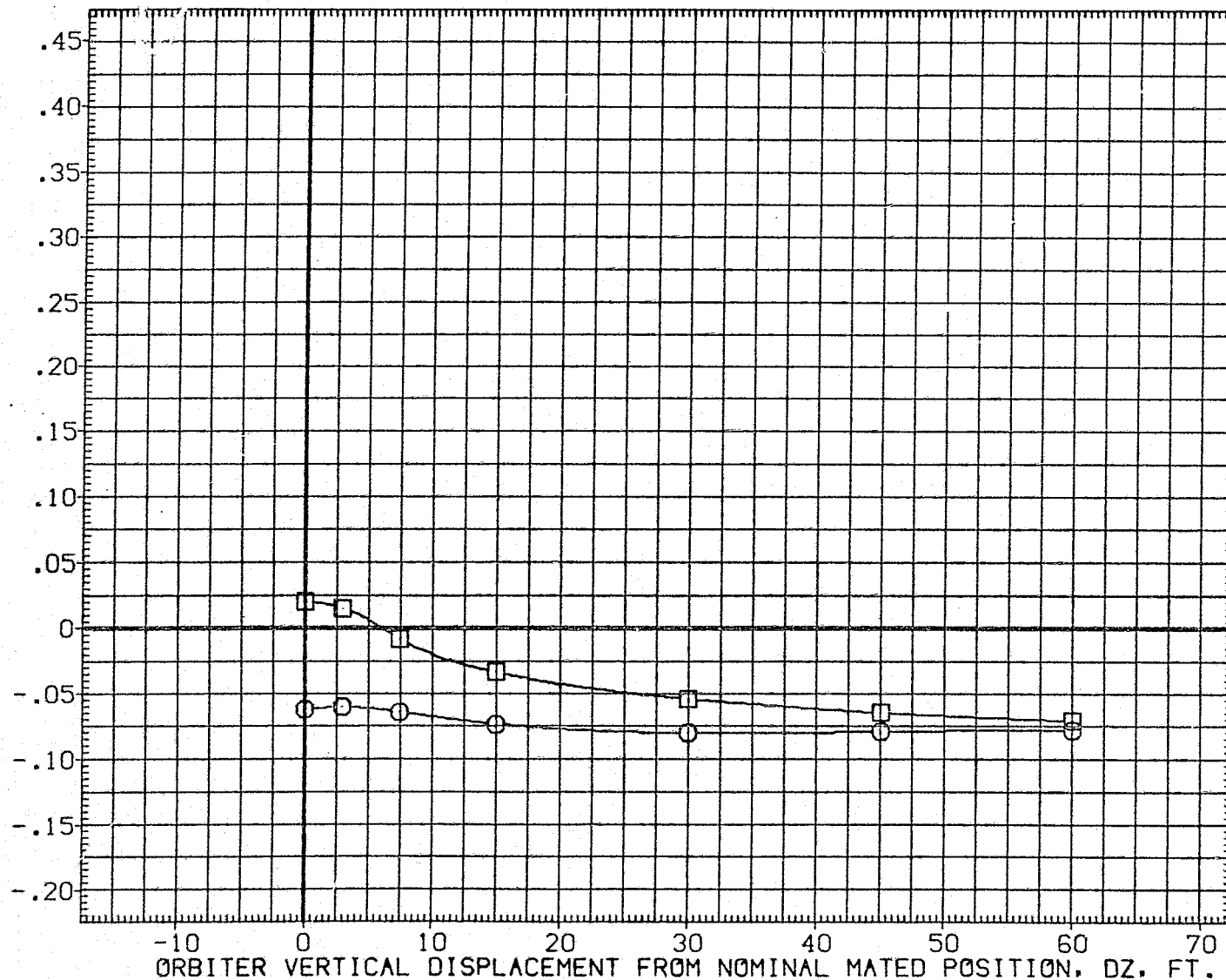


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN125)

SYMBOL		ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-18	.000	ELV-08	.000	
□	14.000	ELEVON	5.000	MACH	.600	
		BETA0	-5.000	PHI	.000	
		DX	.000	DY	10.000	
		BETAC	5.000	ALPHAC	8.000	

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.8000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

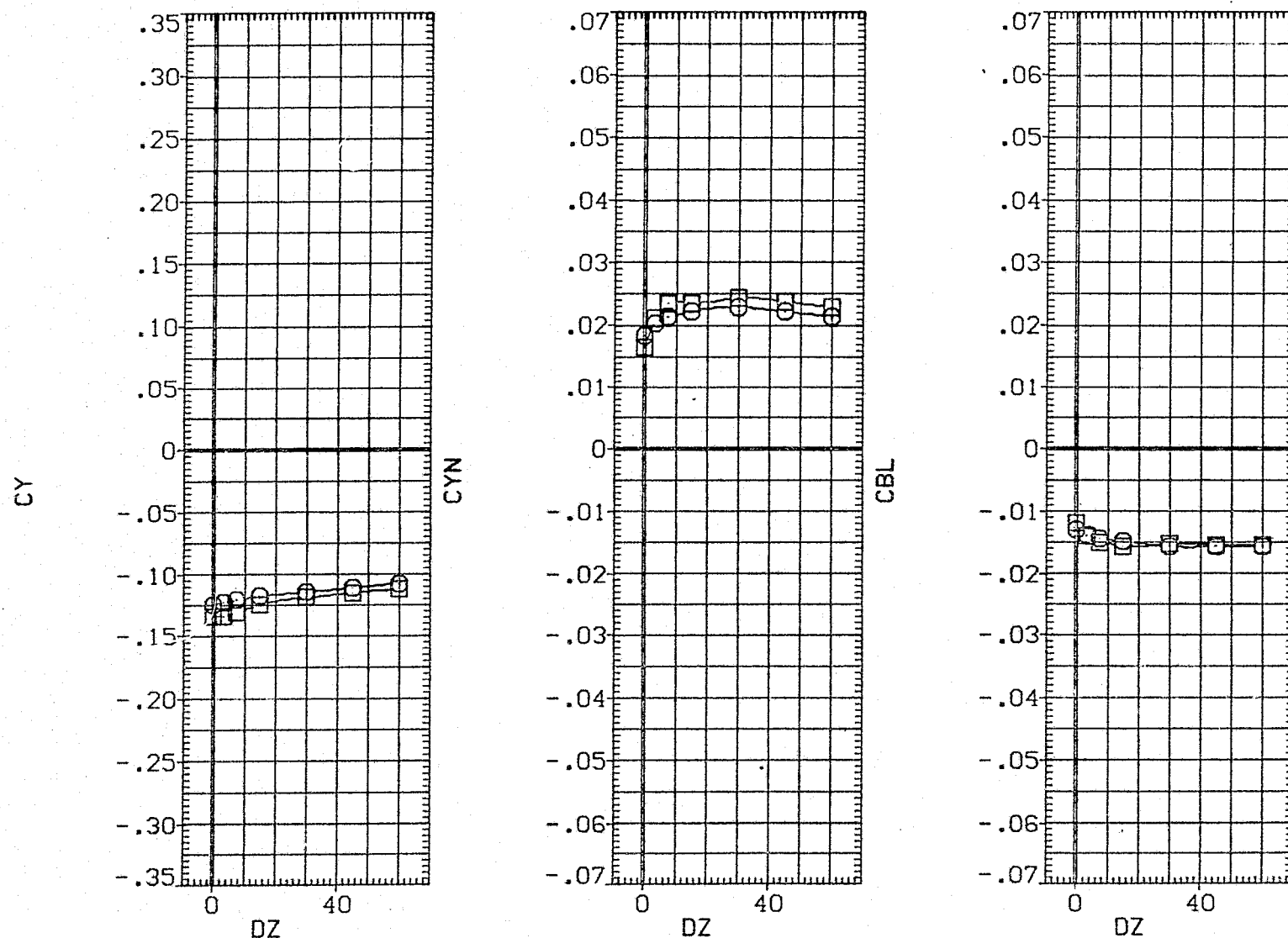


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

CARRIER DATA (MGN125)

SYMBOL	ALPHA0		PARAMETRIC VALUES		
	10.000	14.000	ELV-1B	ELV-0B	.000
○			ELEVON	MACH	.600
□			BETA0	PHI	.000
			DX	DY	10.000
			BETAC	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

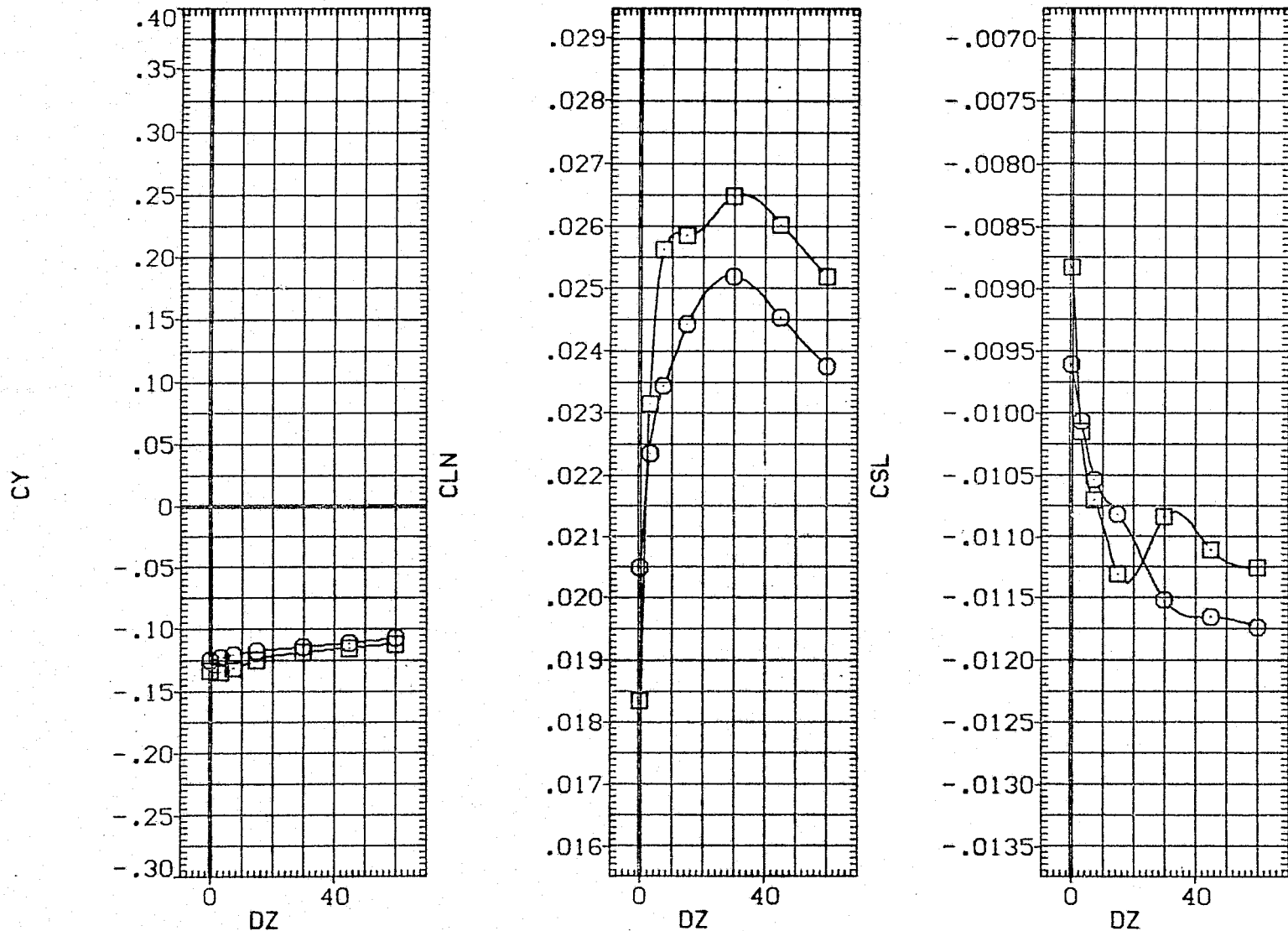


FIG 30 VARIATION OF CARRIER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC -5.000 ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

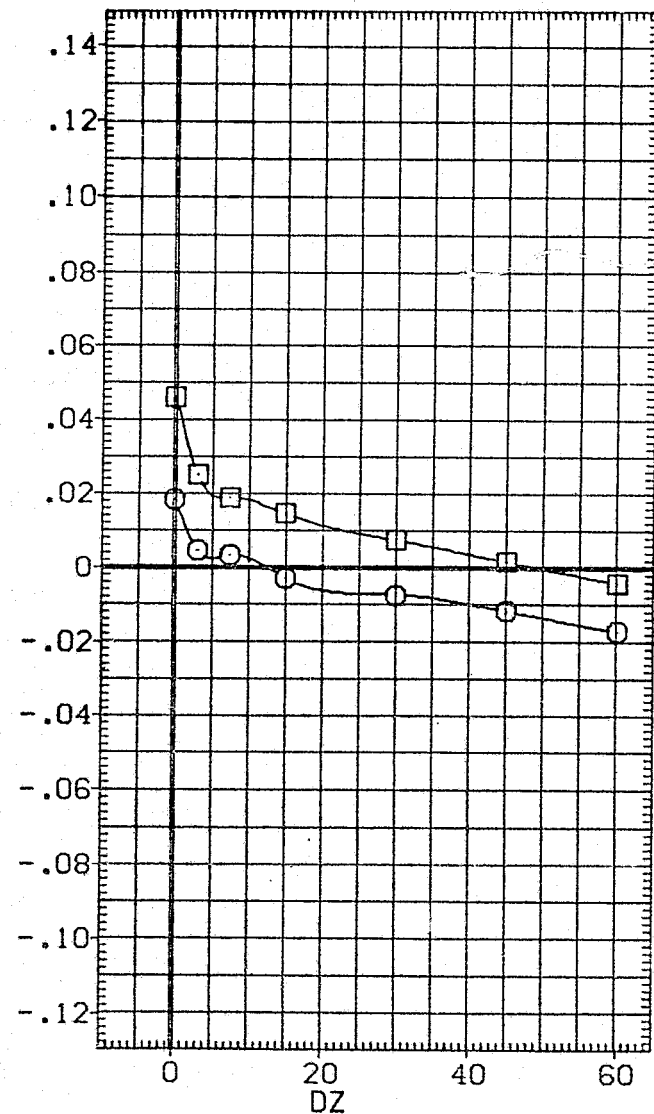
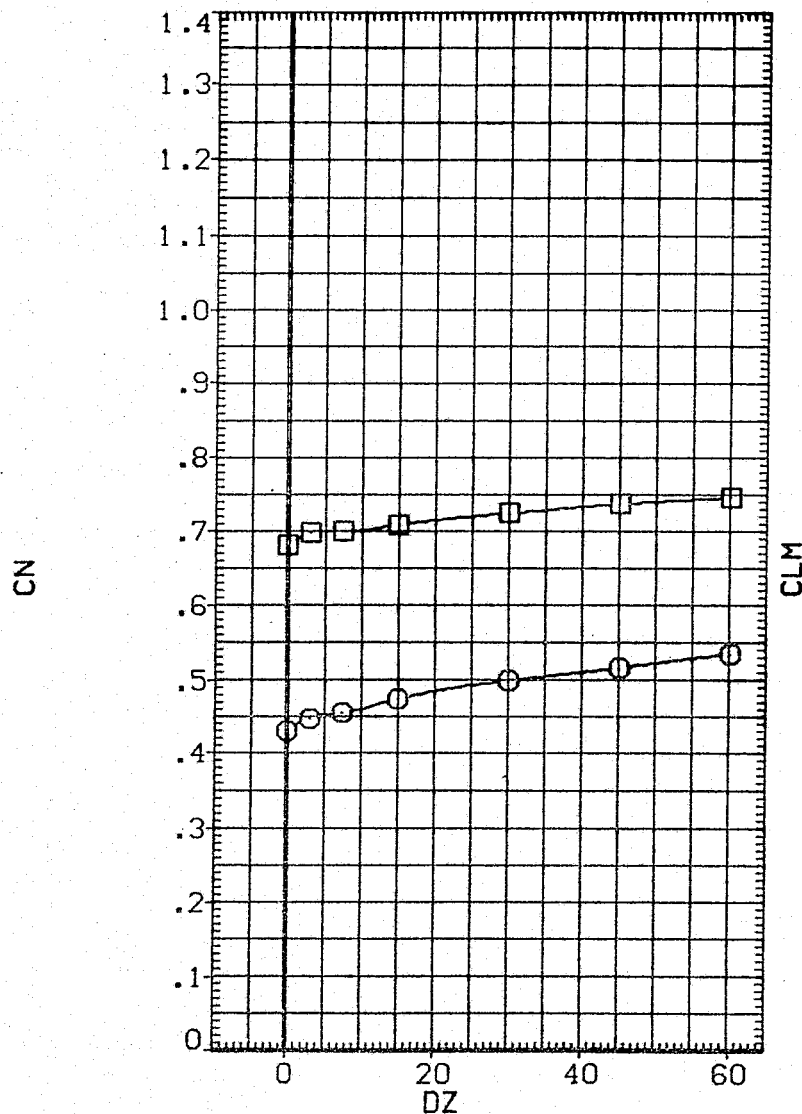


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN120)

SYMBOL		PARAMETRIC VALUES				
○	ALPHA0	10.000	ELV-IB	.000	ELV-OB	.000
□		14.000	ELEVON	5.000	MACH	.600
			BETA0	-5.000	PHI	.000
			DX	.000	DY	10.000
			BETAC	-5.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

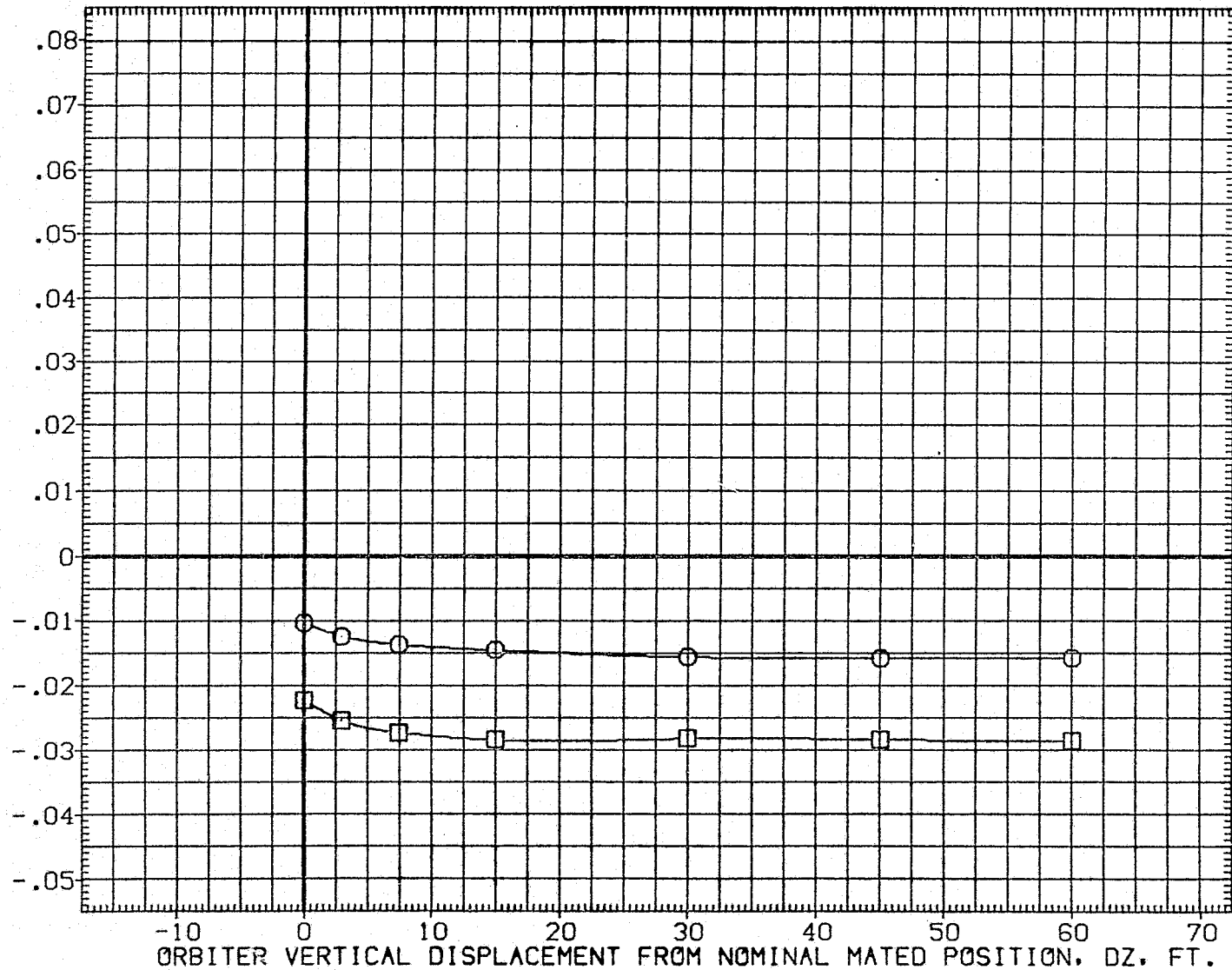


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN120)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-16	.000	ELV-08	.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	-5.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XHRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

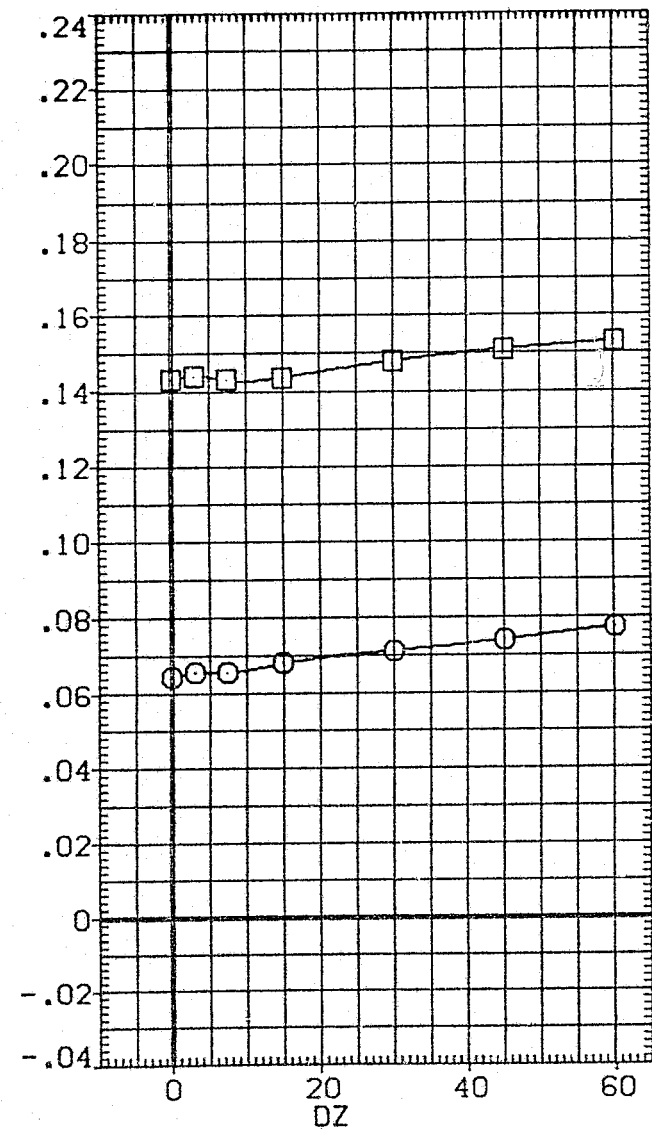
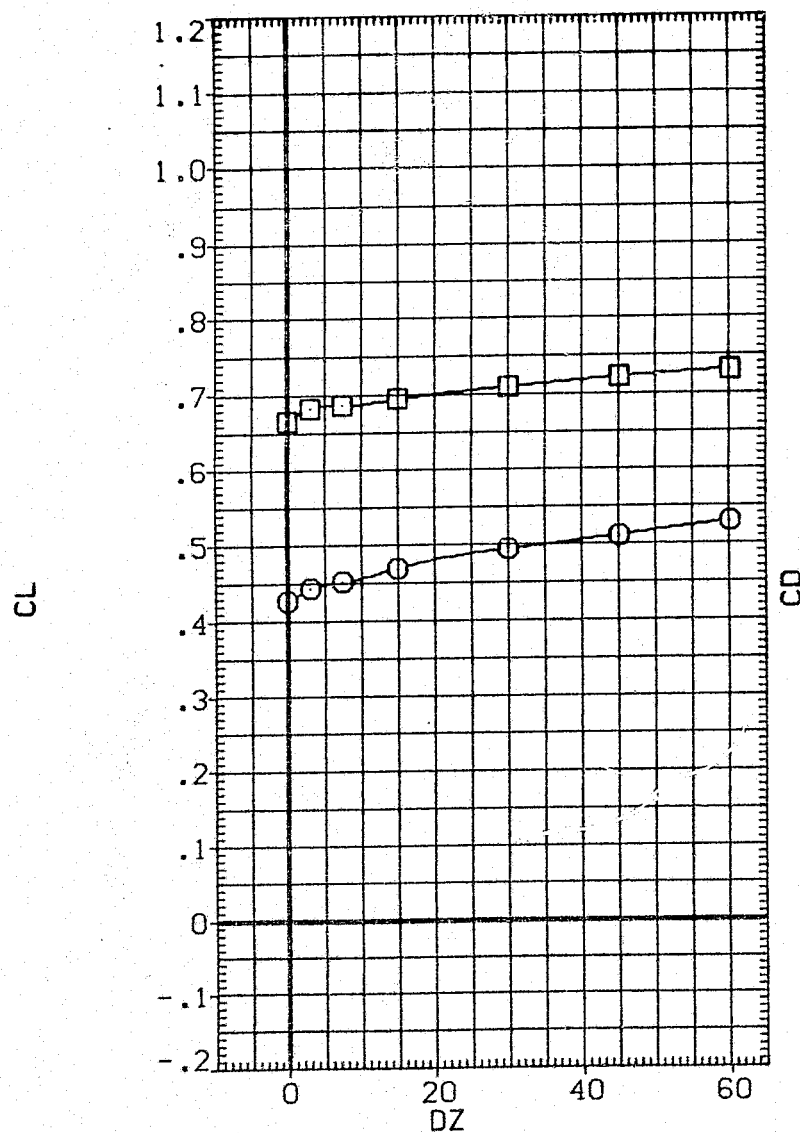
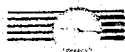


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)



CA20 747/1 01 S1

ORBITER DATA (NGN120)

SYMBOL	ALPHA0		PARAMETRIC VALUES			
	10.000	14.000	ELV-IB	ELEVON	BETA0	DX
○			.000	5.000	-5.000	.000
□			ELV-OB	MACH	PHI	DY
			.000	.600	.000	10.000
			ALPHAC			4.000
			BETAC			

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

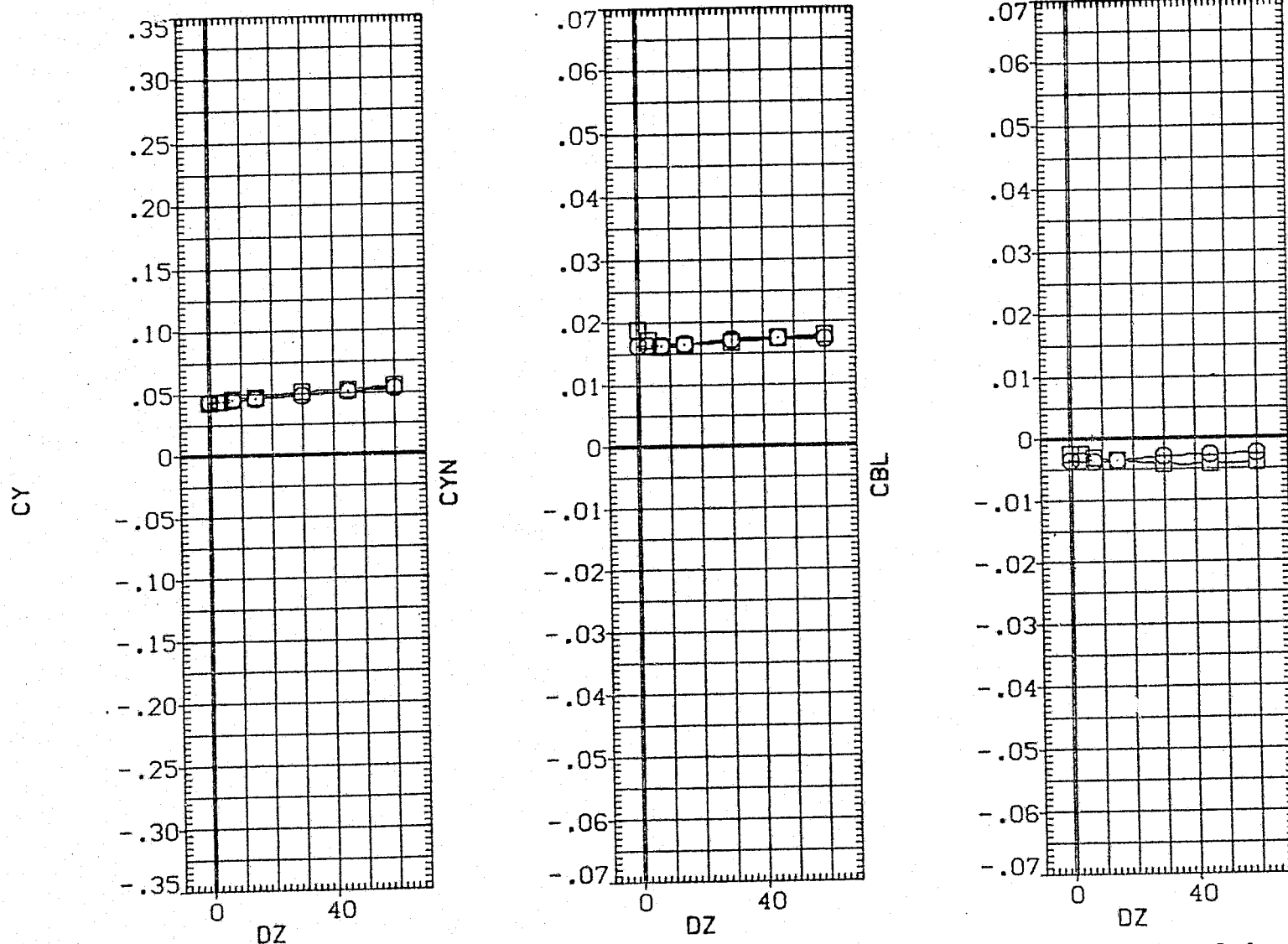


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (120 - 007) (VGN120)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	-5.000
□	14.000	ELV-1B	.000	ELV-0B	.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

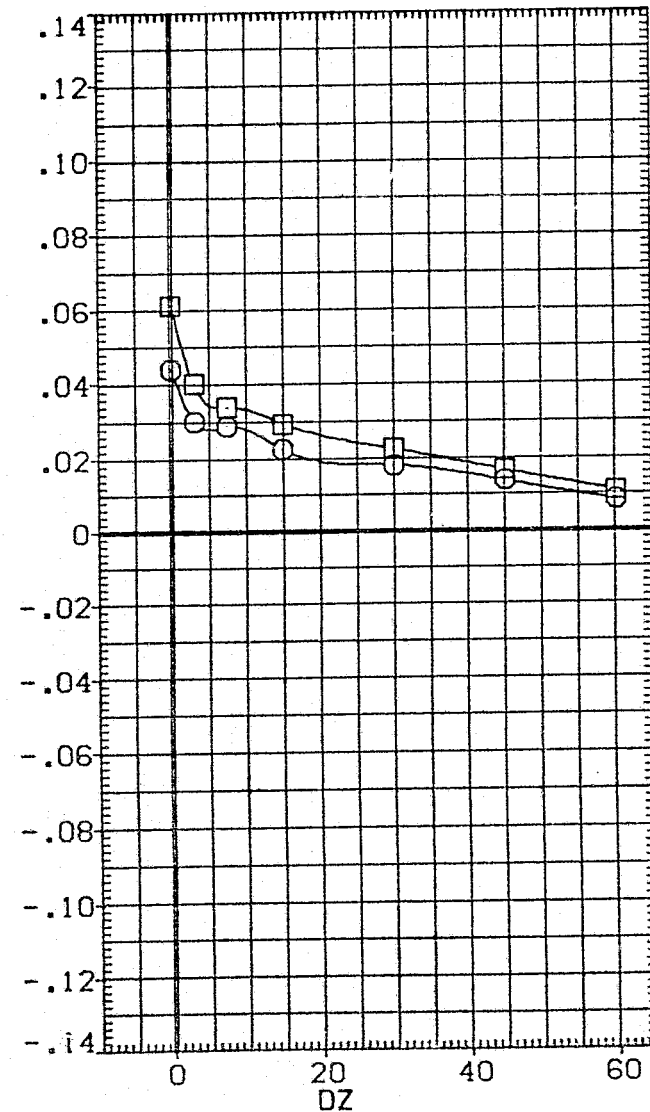
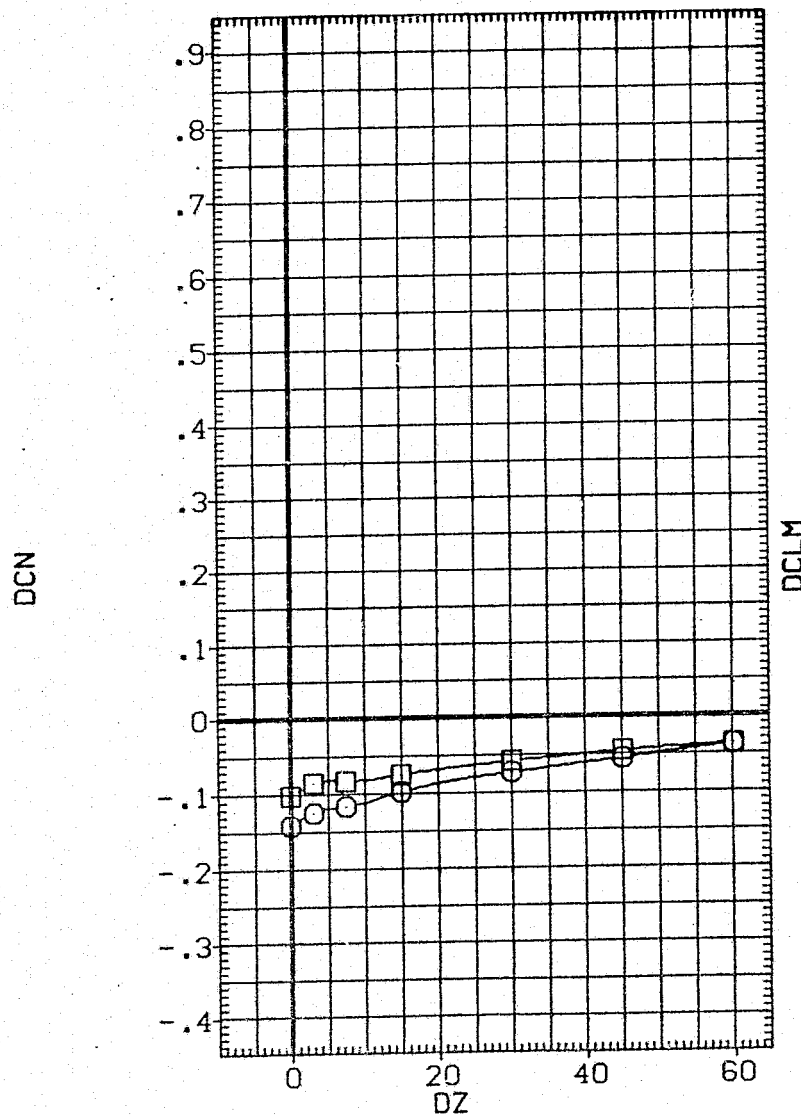


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (120 - 007) (VGN120)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-18

ELEVON

PHI

DY

PARAMETRIC VALUES

4.000

.000

5.000

.000

10.000

BETAC

ELV-08

MACH

DX

BETA0

-5.000

.000

.600

.000

-5.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.8100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

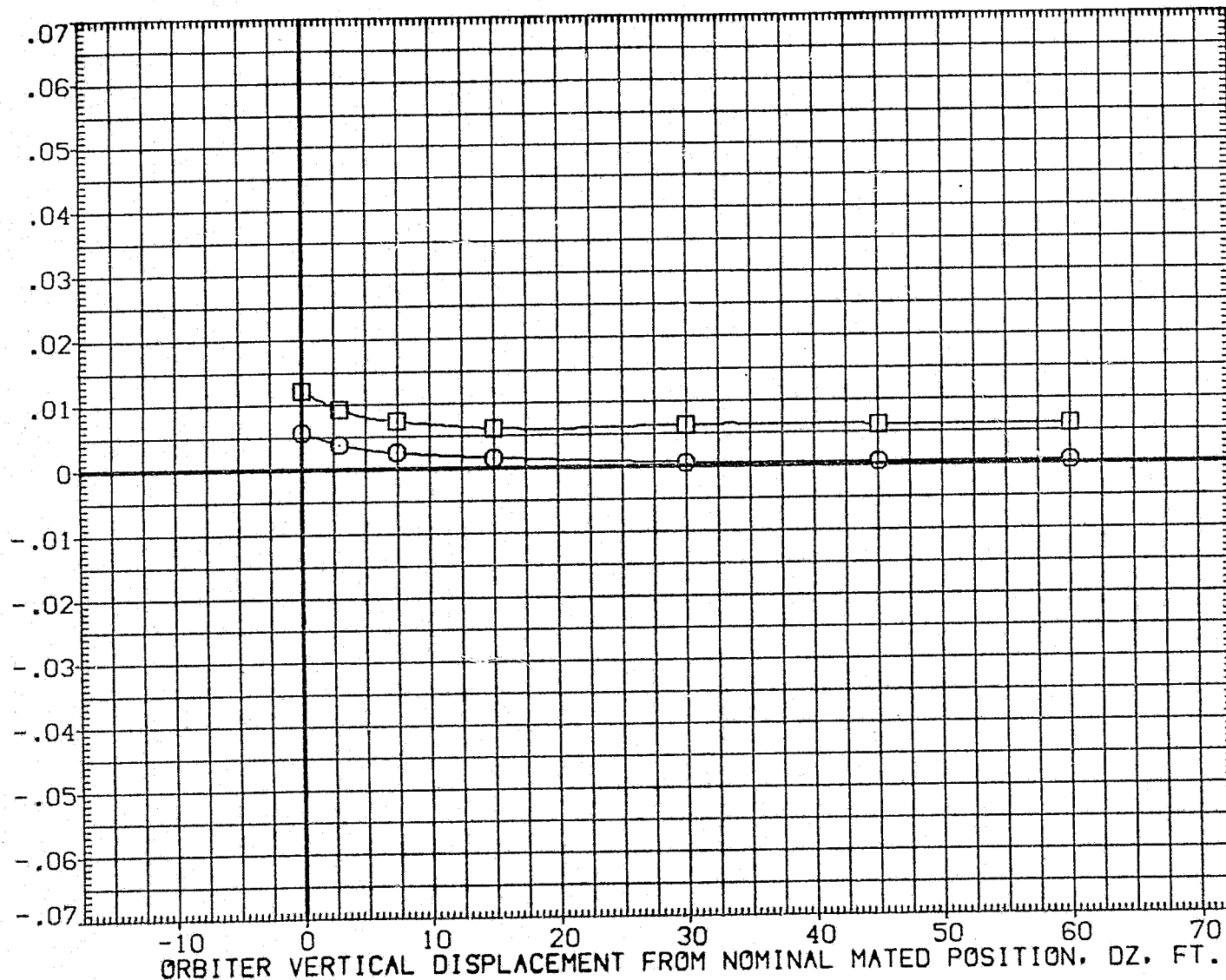


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
	10.000	ALPHAC	4.000	BETAC	-5.000
○	14.000	ELV-1B	.000	ELV-0B	.000
□		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

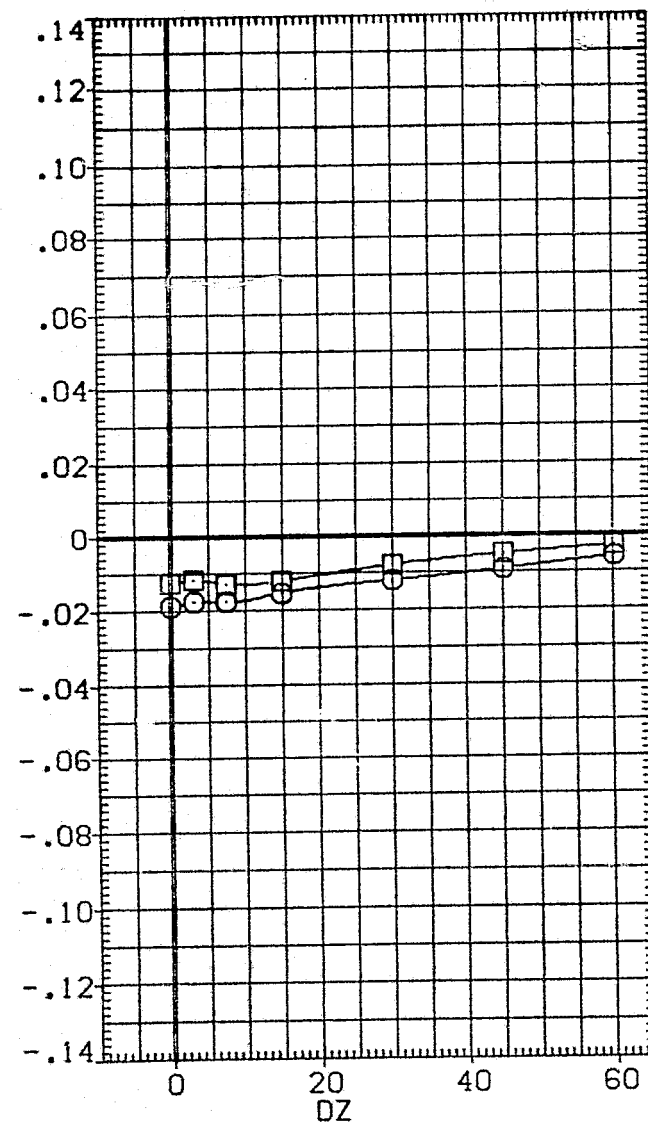
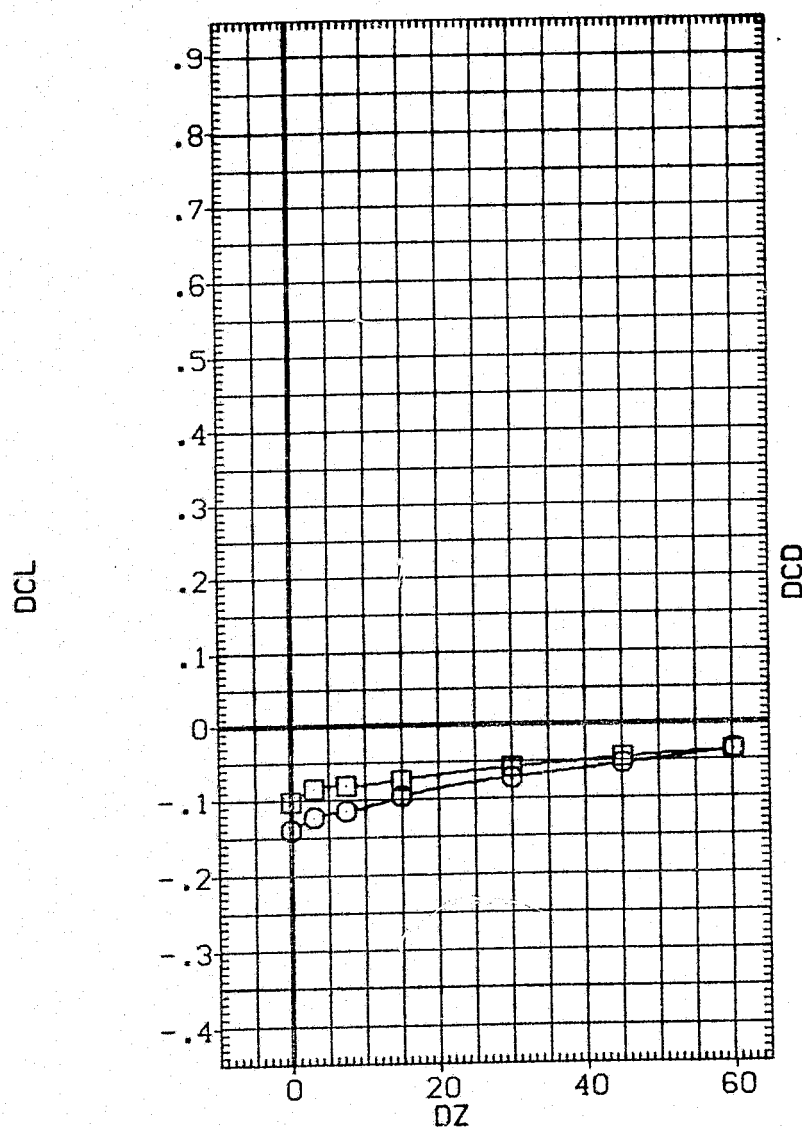


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN121)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08
○	10.000	ELEVON	.000	.000
□	14.000	BETA0	5.000	.600
		DX	-5.000	.000
		BETAC	.000	10.000
			ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

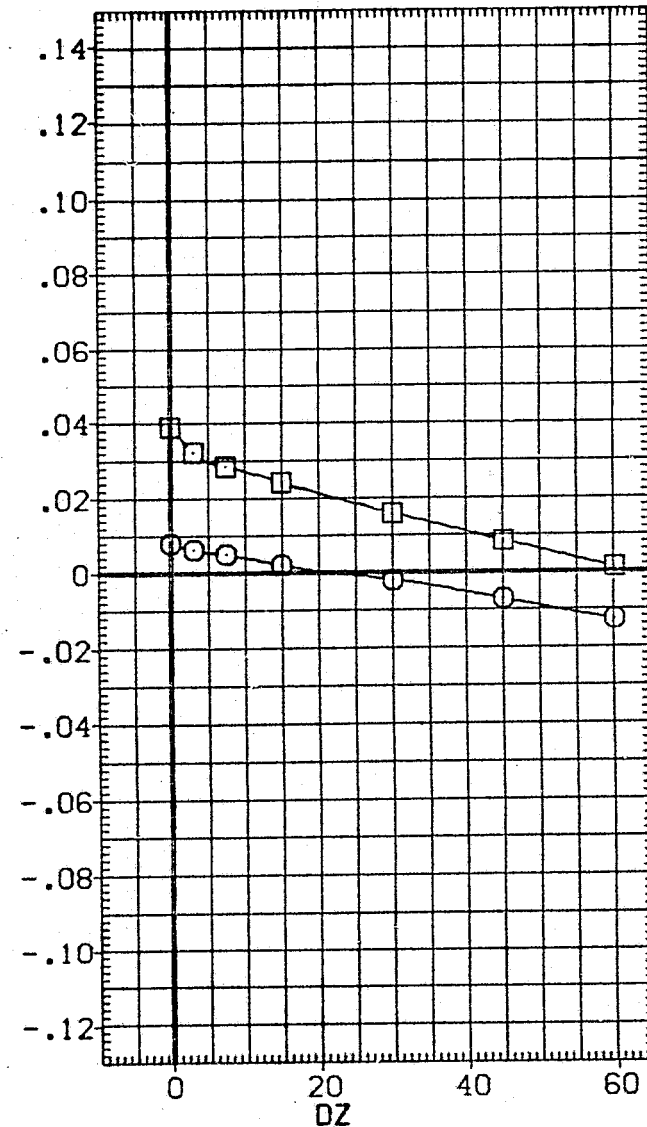
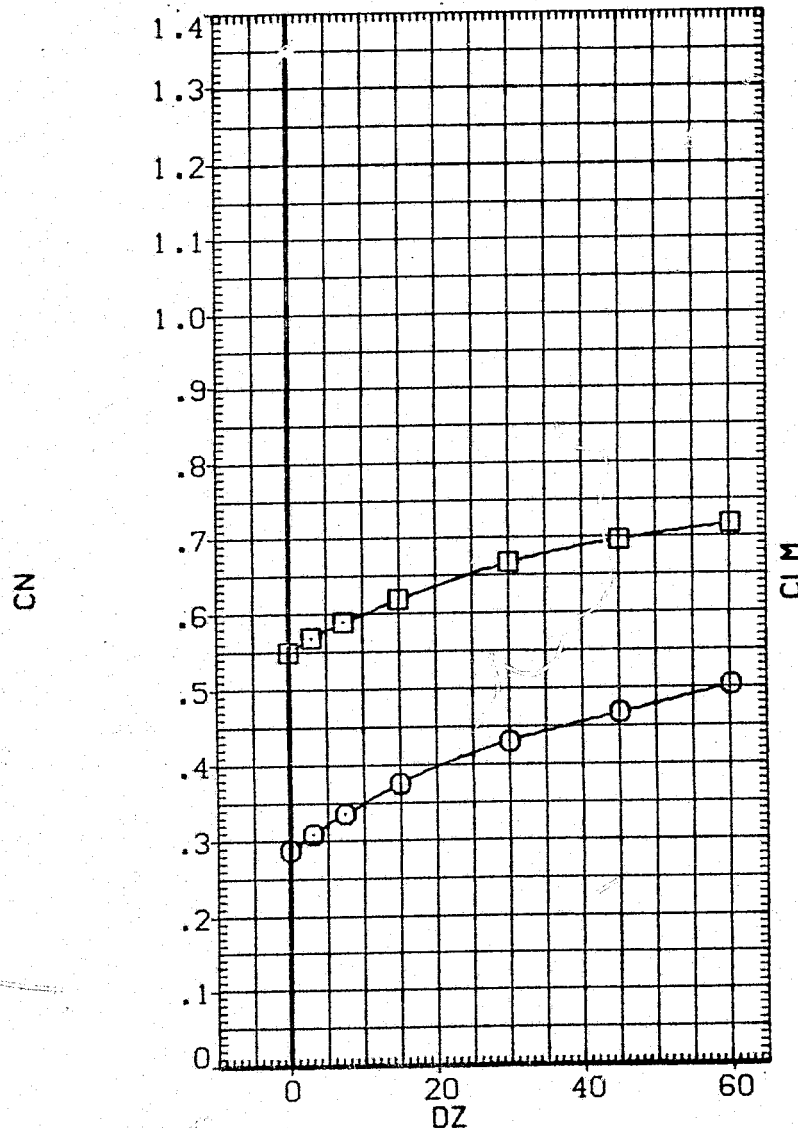


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		OX .000 DY 10.000
		BETAC -5.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

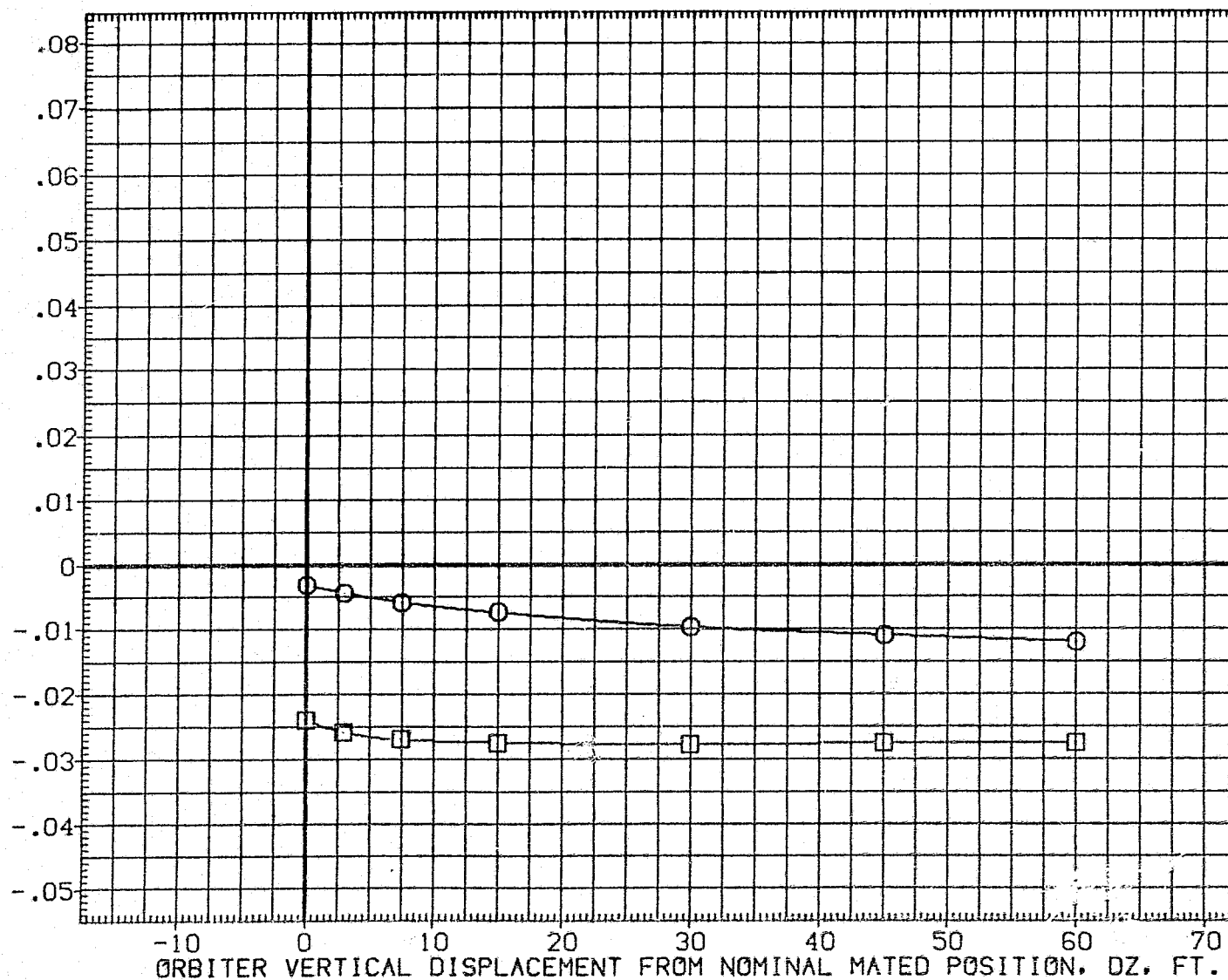


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN121)

SYMBOL	ALPHA	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC -5.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

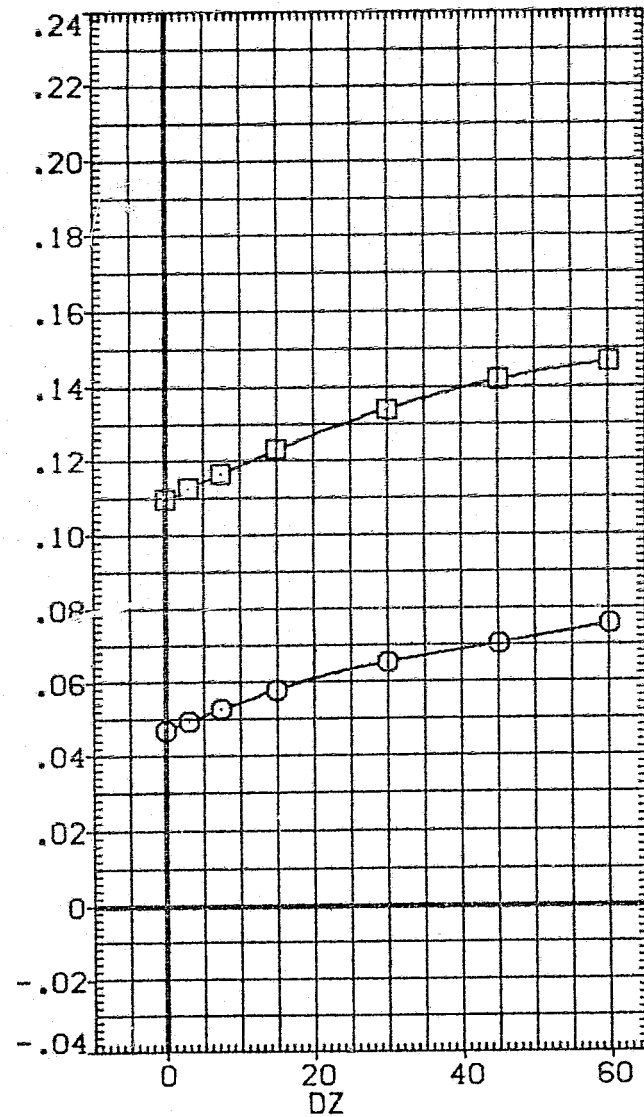
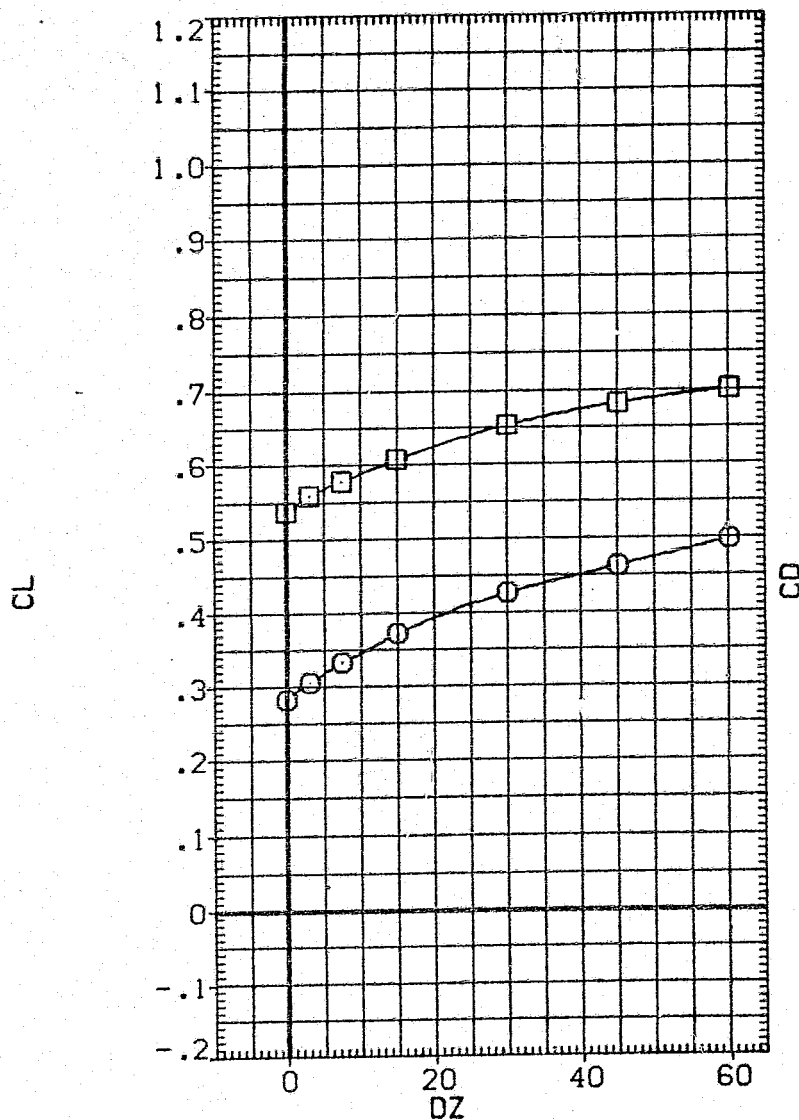


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN121)

SYMBOL	ALPHA0	ELV-10	PARAMETRIC VALUES	ELV-00
○	10.000	ELEVON	.000	.000
□	14.000	BETA0	5.000	.600
		DX	-5.000	.000
		BETAC	.000	10.000
			PHI	.000
			DY	8.000
			ALPHAC	

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

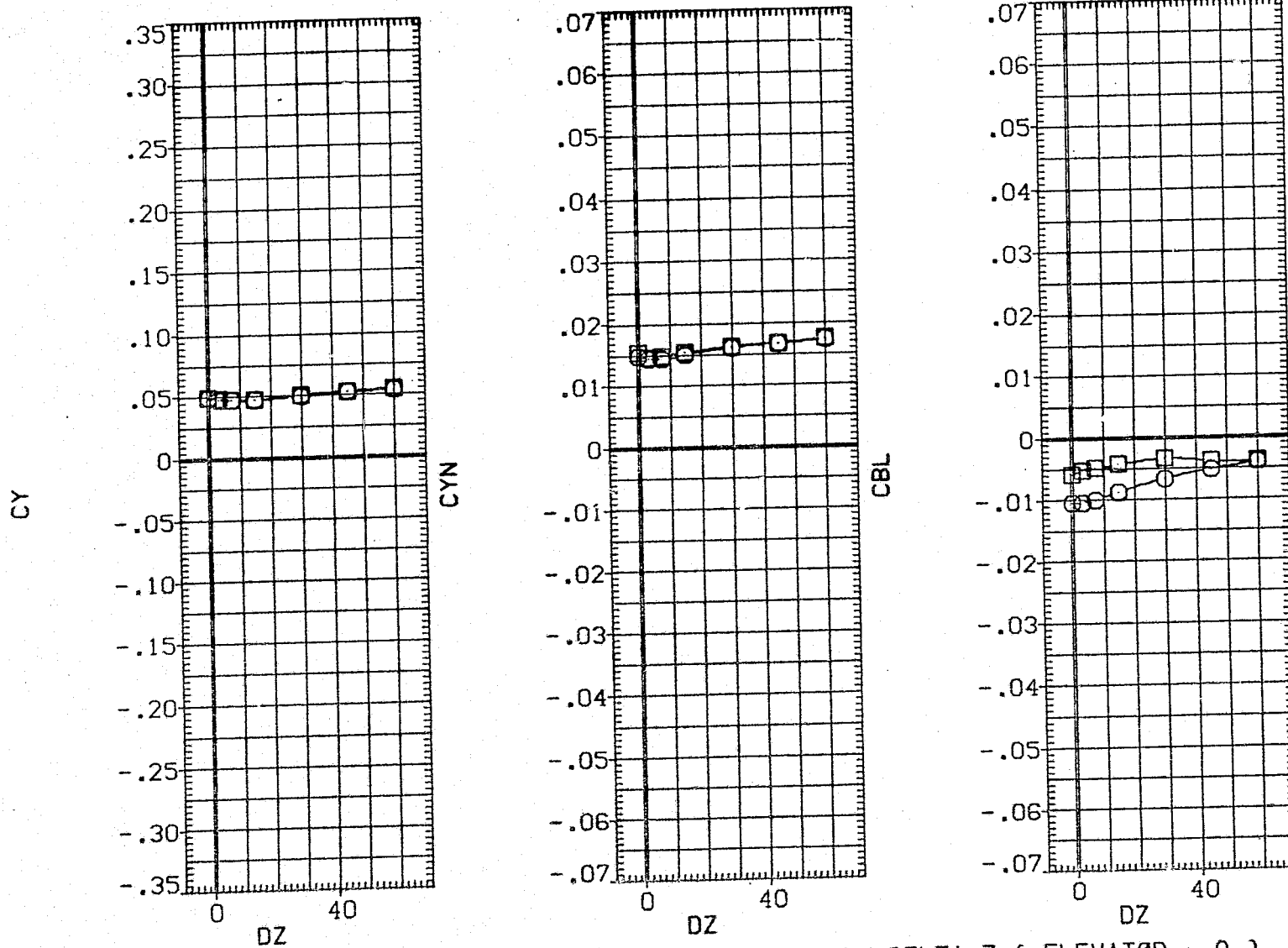


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (121 - 007)(VGN121)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	-5.000
□	14.000	ELV-IB	.000	ELV-OB	.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN.X0
YMRF	.0000	IN.Y0
ZMRF	375.0000	IN.Z0
SCALE	.0300	

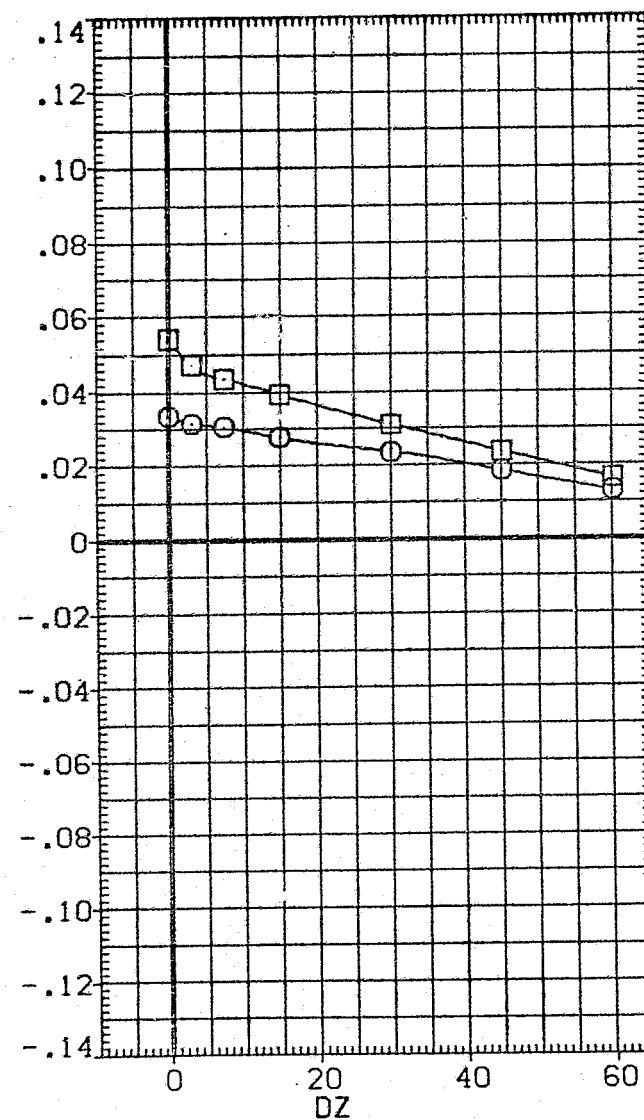
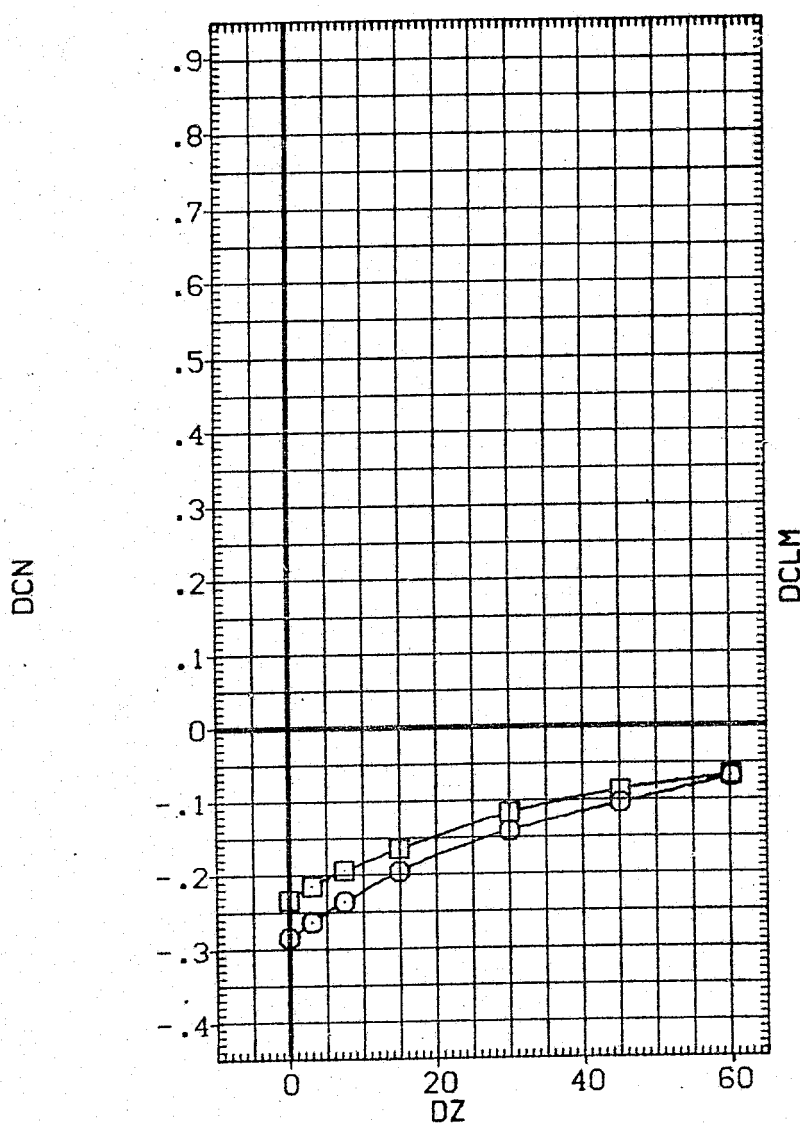


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
□	10.000	ALPHAC 8.000 BETAC -5.000
○	14.000	ELV-IB .000 ELV-OB .000
		ELEVON 5.000 MACH .600
		PHI .000 OX .000
		DY 10.000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

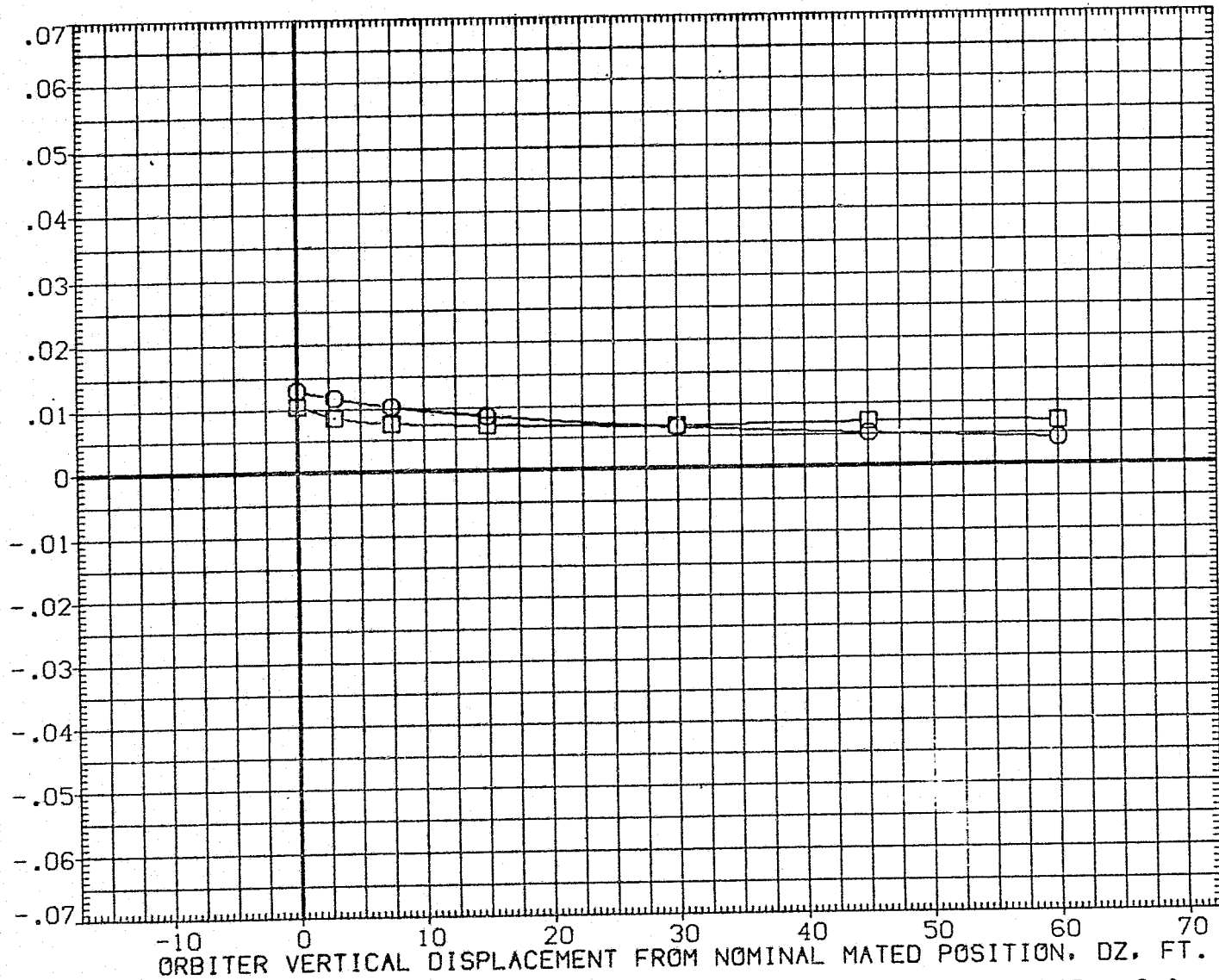


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (121 - 007)(VGN121)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

8.000 BETAC -5.000

ELV-18

.000 ELV-08

ELEVON

5.000 MACH .600

PHI

.000 DX .000

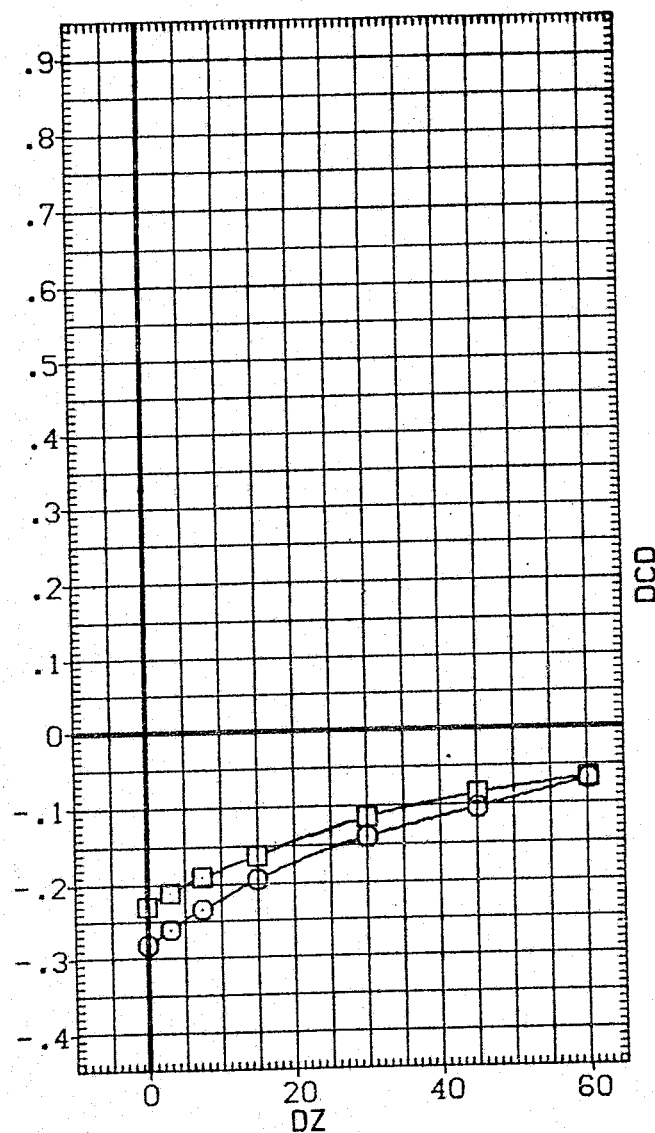
DY

10.000 BETA0 -5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCL



DCD

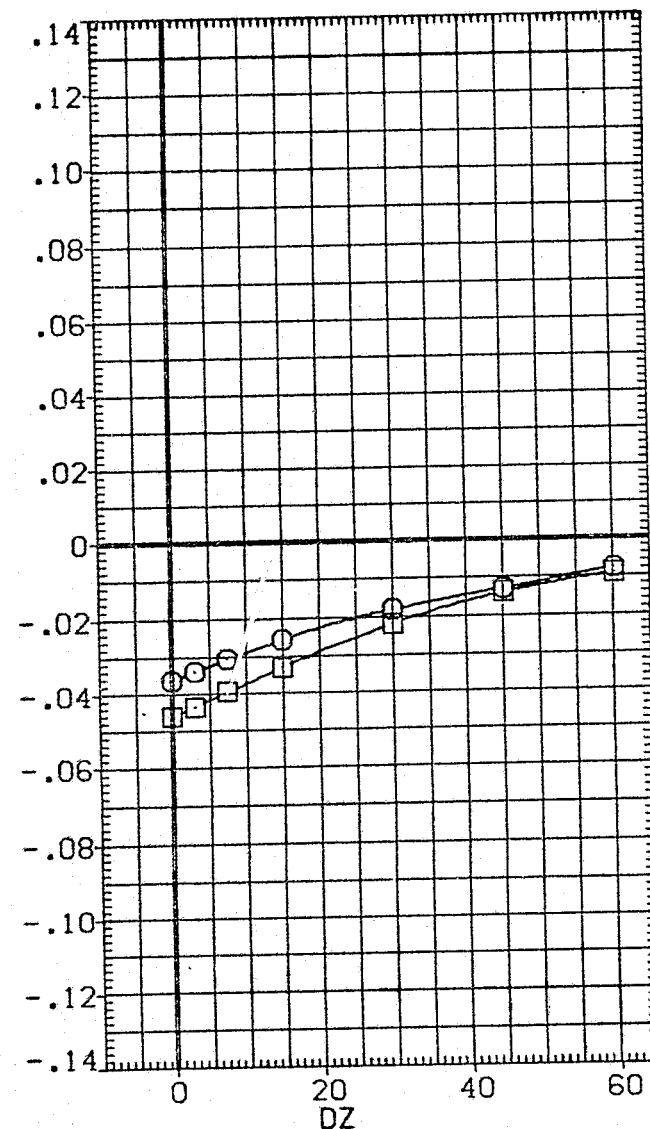


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	.000	MACH	.600
□	14.000	5.000	PHI	.000
		BETA0	DY	10.000
		OX	ALPHAC	4.000
		BETAC		

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

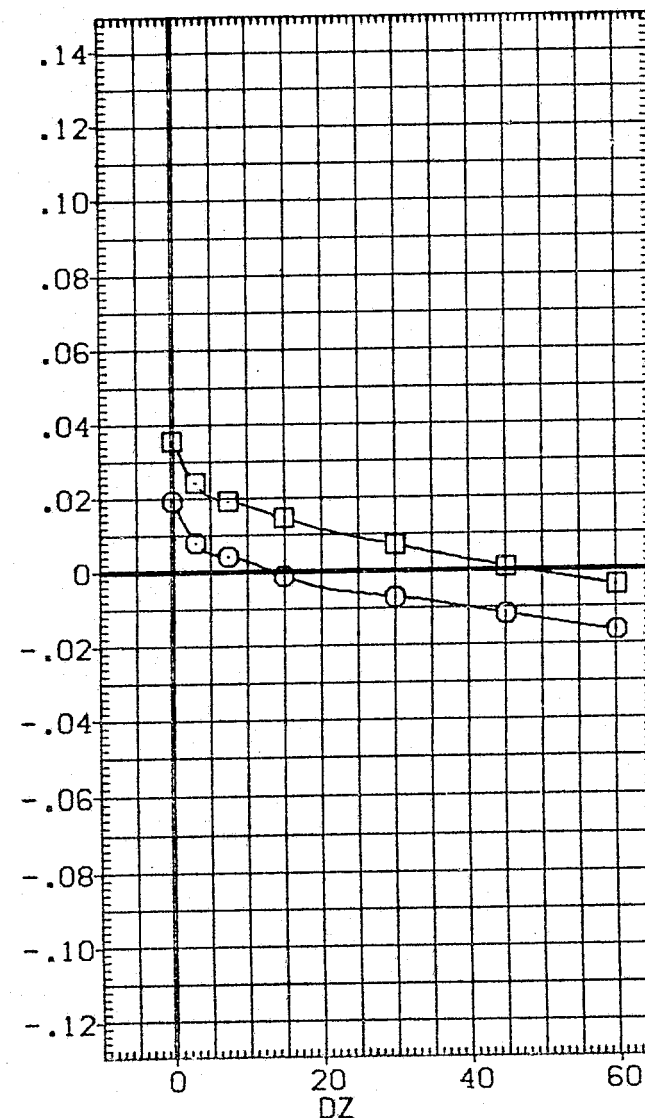
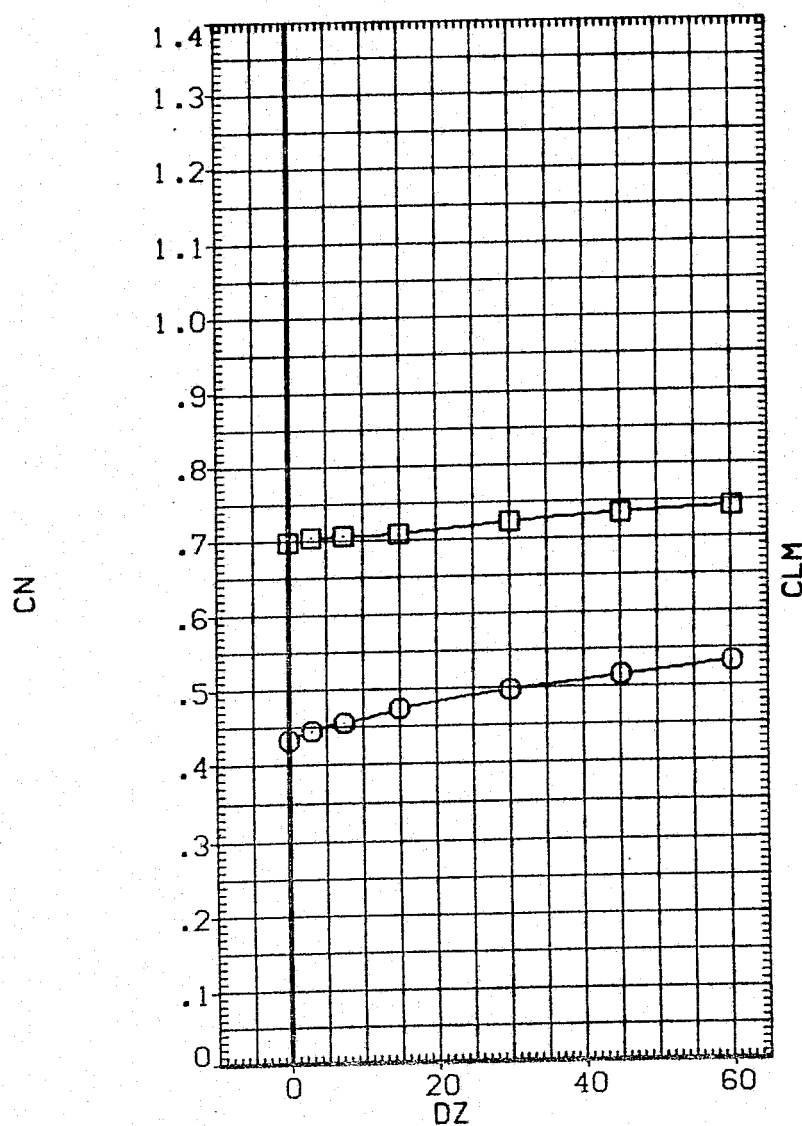


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN122)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	.000	MACH	.600
□	14.000	5.000	PHI	.000
		-5.000	DY	10.000
		.000	ALPHAC	4.000
		.000		

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

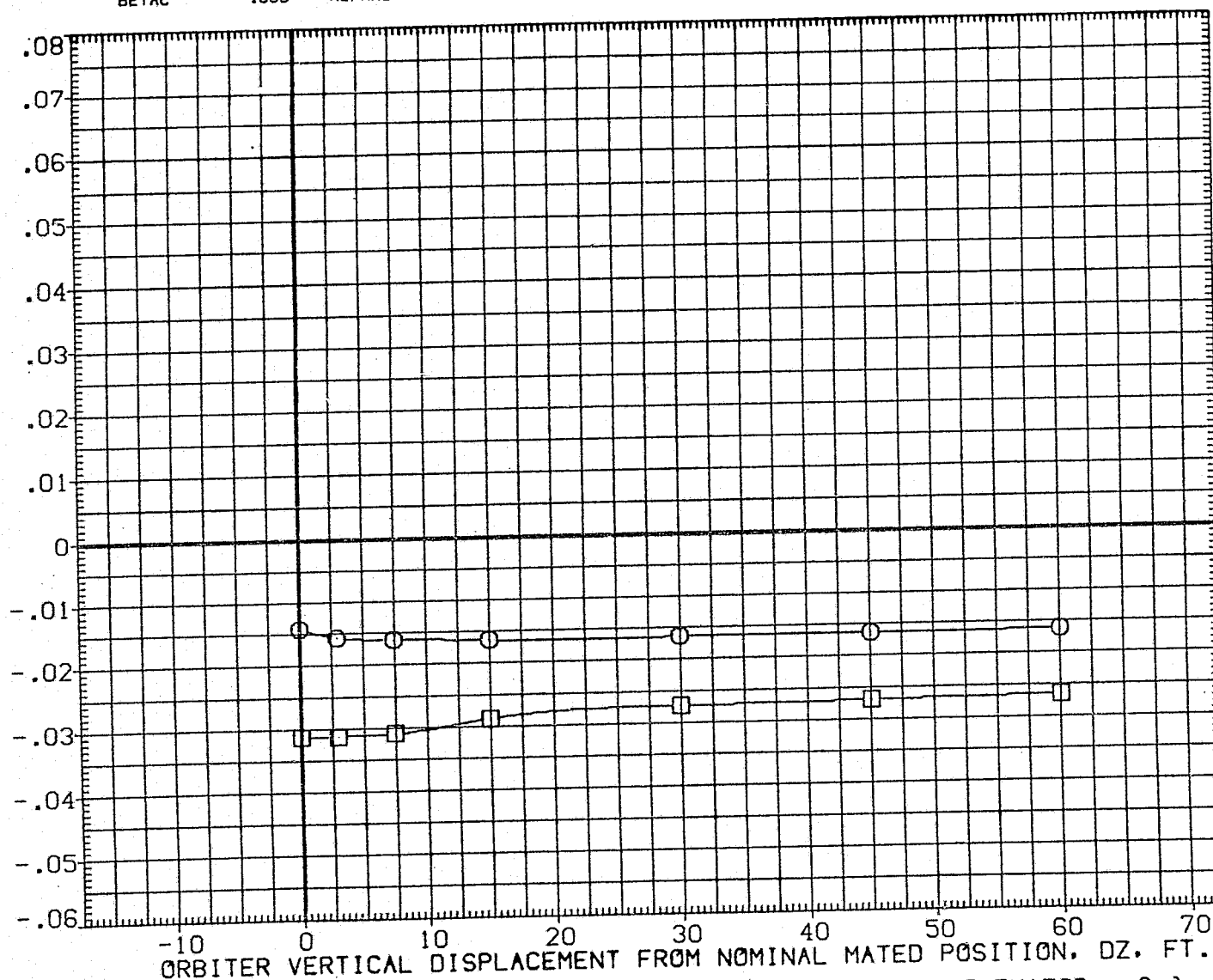


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN122)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

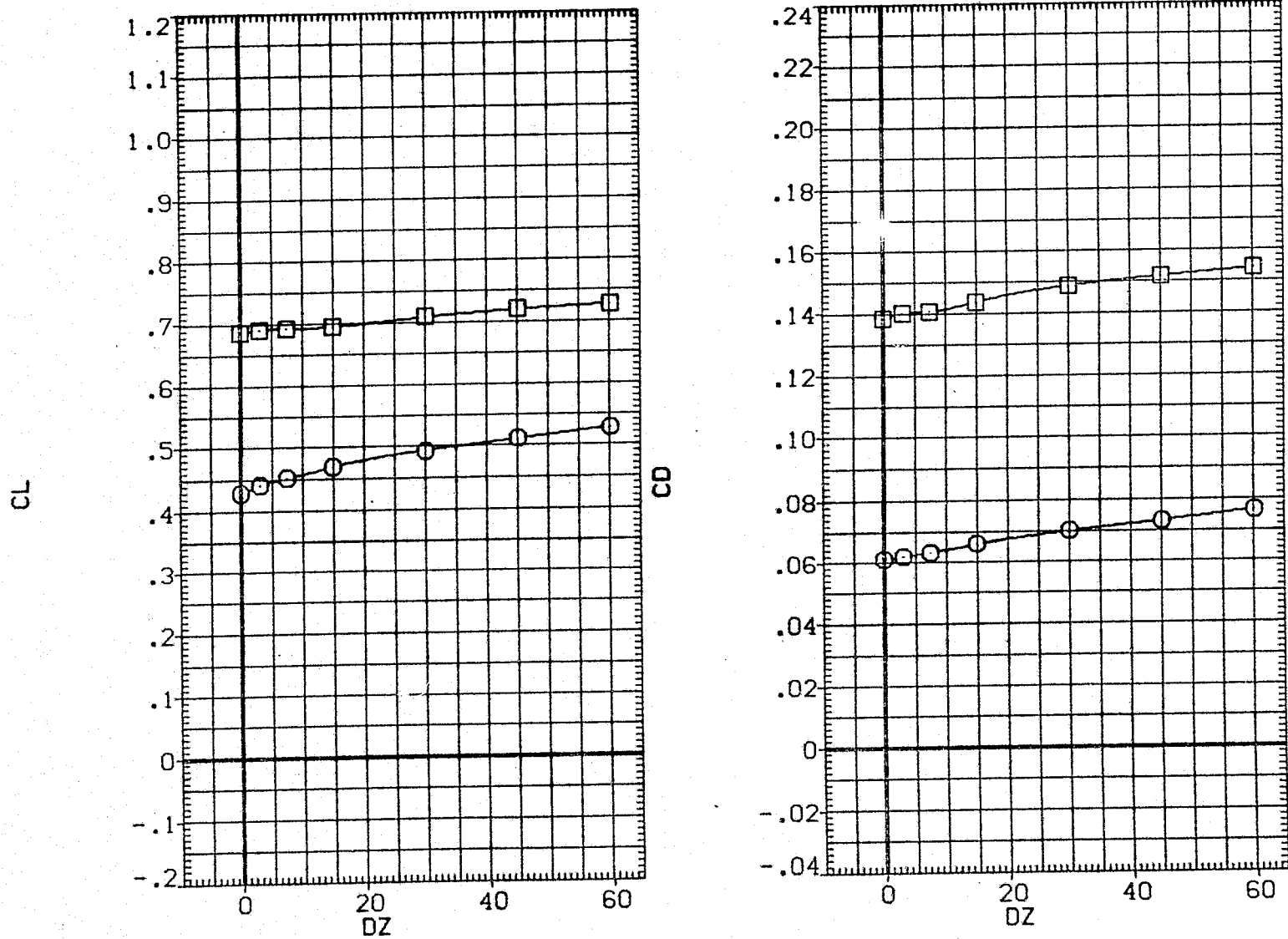


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN122)

SYMBOL		ALPHA0	PARAMETRIC VALUES			
○		10.000	ELV-IB	.000	ELV-OB	.000
□		14.000	ELEVON	5.000	MACH	.600
			BETA0	-5.000	PHI	.000
			DX	.000	DY	10.000
			BETAC	.000	ALPHAC	4.000

REFERENCE INFORMATION		
SRC	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

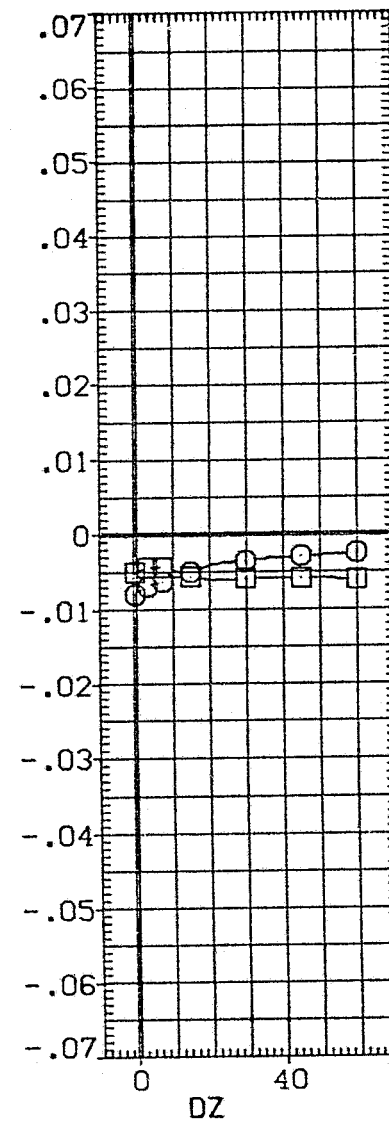
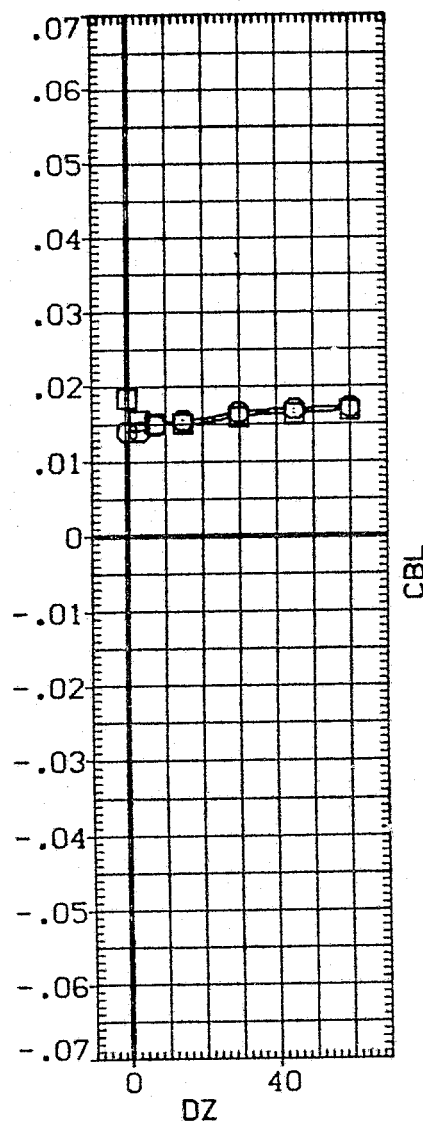
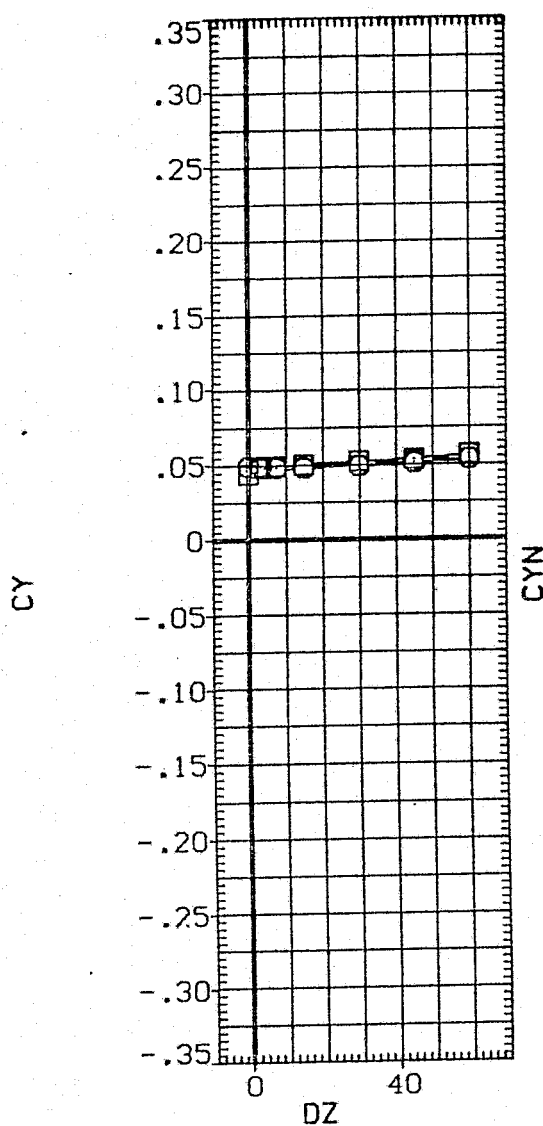


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
	10.000	ALPHAC	4.000	BETAC	.000
○	14.000	ELV-IB	.000	ELV-OB	.000
□		ELEVON	5.000	MACH	.600
		PHI	.000	OX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

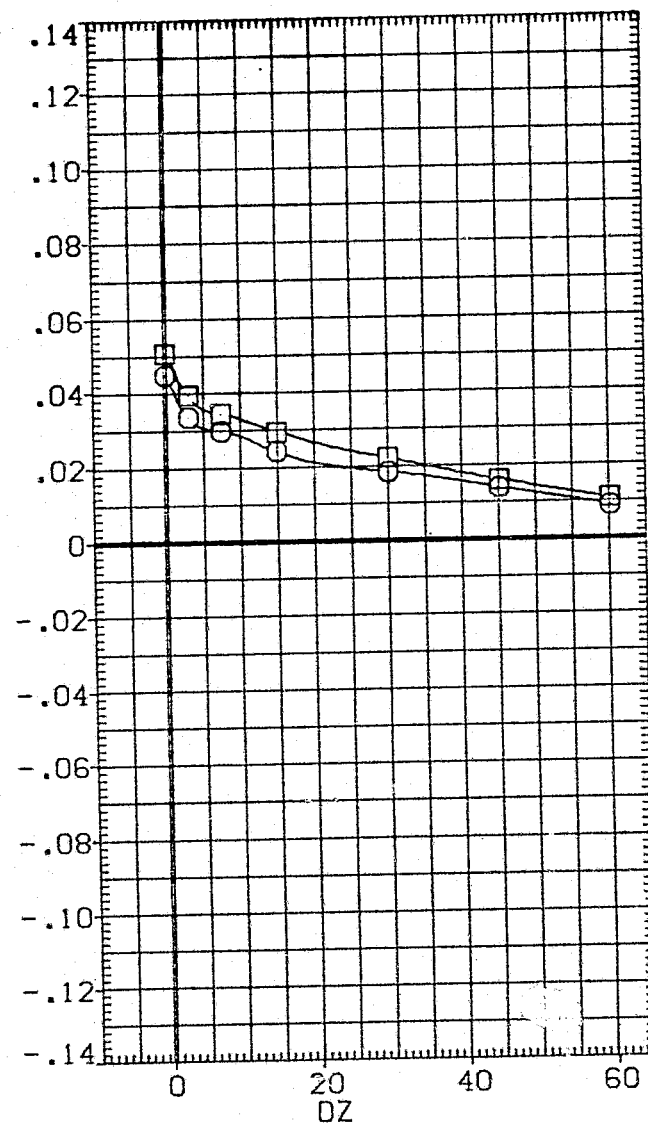
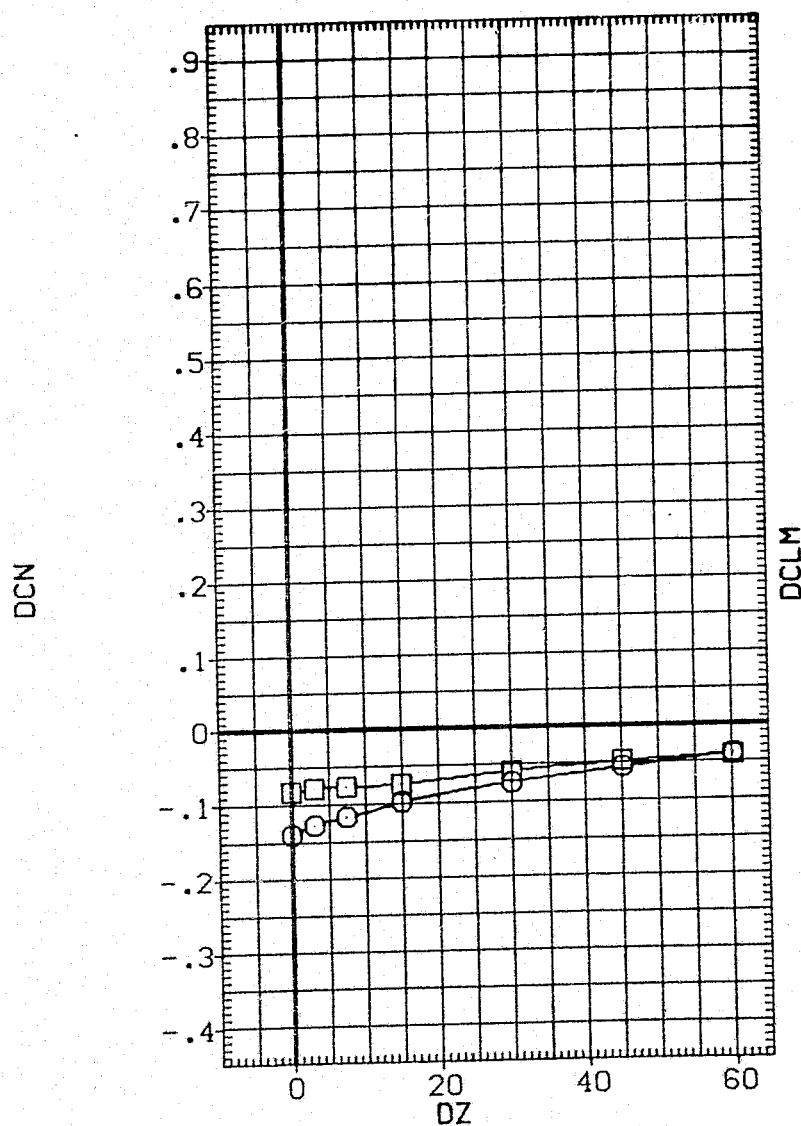


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (122 - 007) (VGN122)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 4.000 BETAC .000
□	14.000	ELV-IB .000 ELV-OB .000
		ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY 10.000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

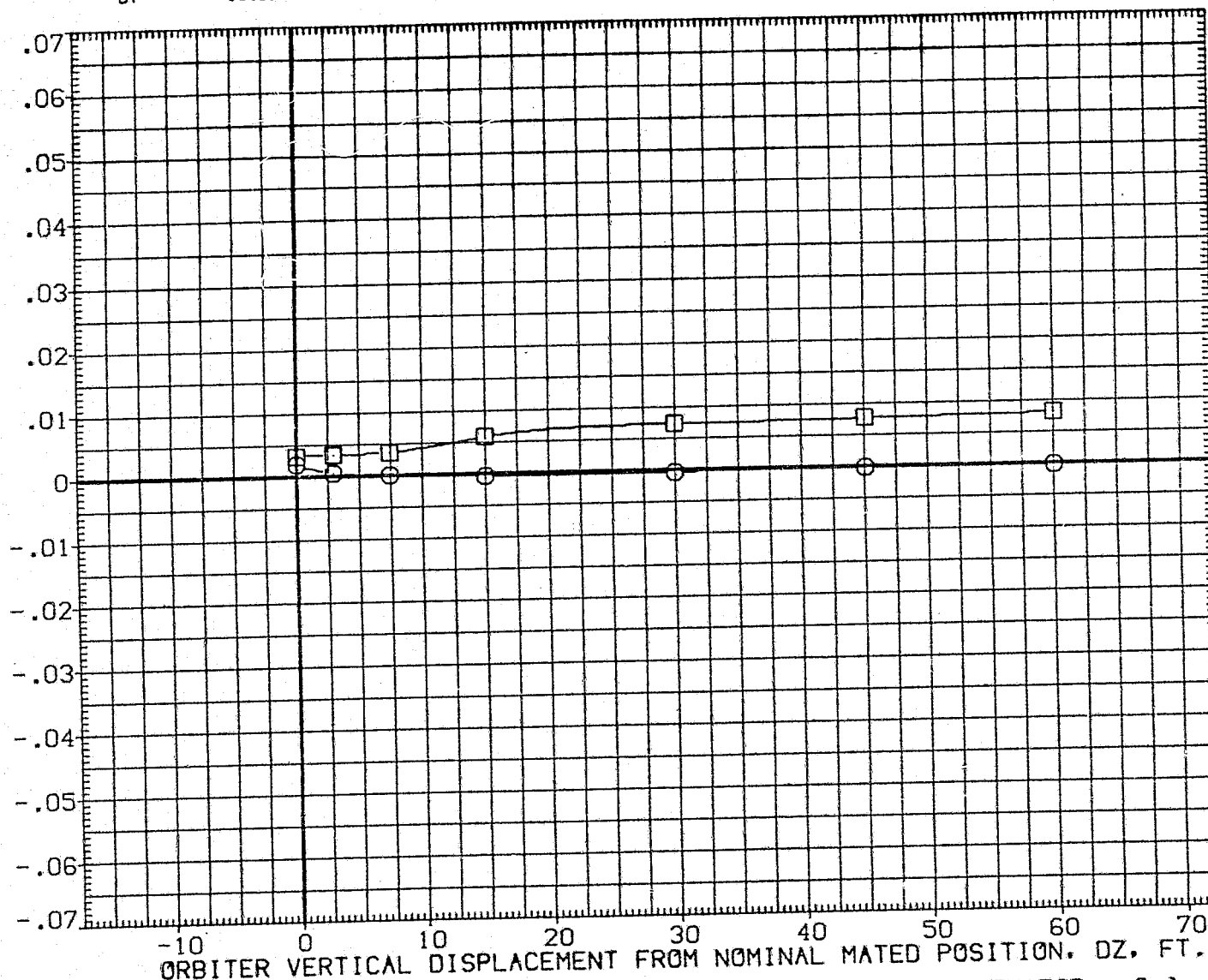


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

.000

ELV-18

.000

ELV-08

.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

.000

DY

10.000

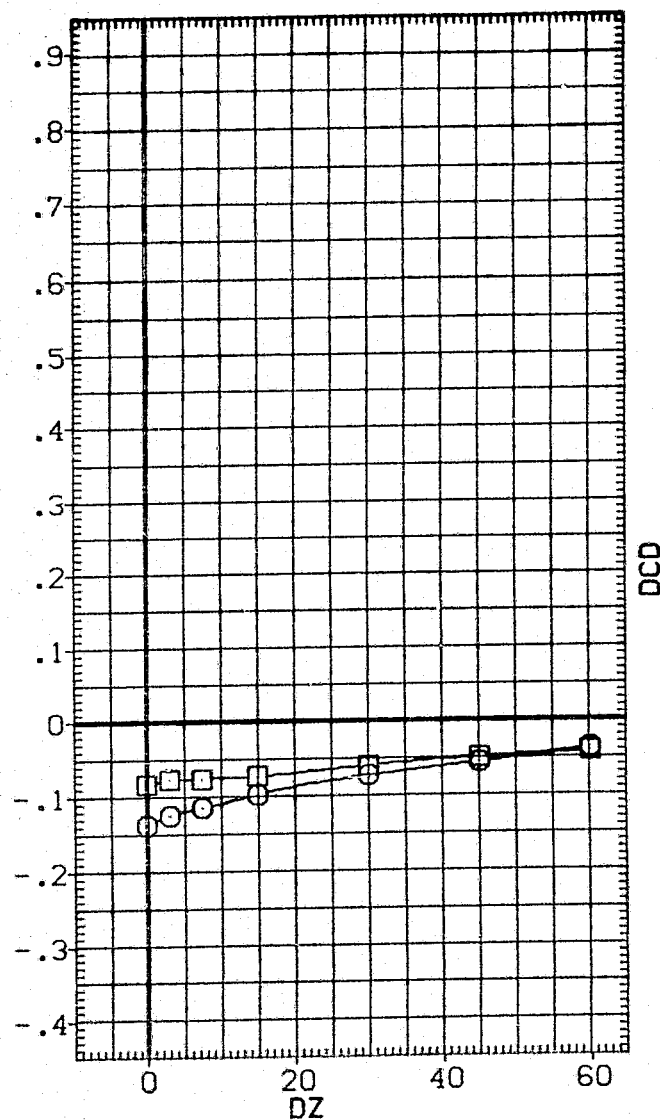
BETA0

-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
YMRP	1109.0000	IN.X0
ZMRP	375.0000	IN.Y0
SCALE	.0300	IN.Z0

DCL



DCD

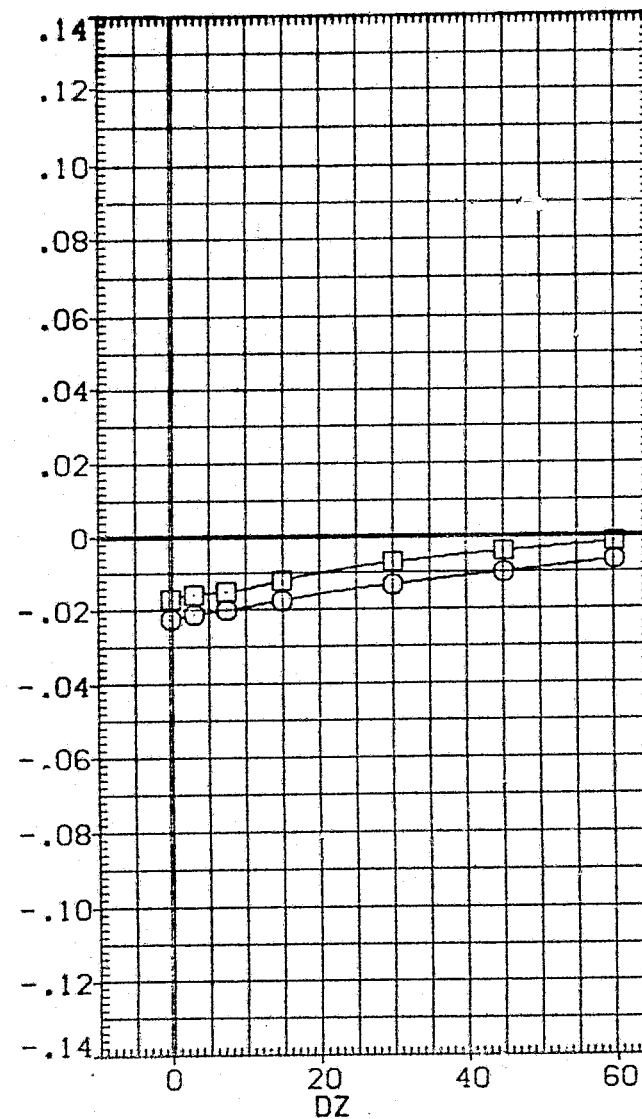


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN123)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-1B	.000	ELV-0B	.000
□	14.000	ELEV0N	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

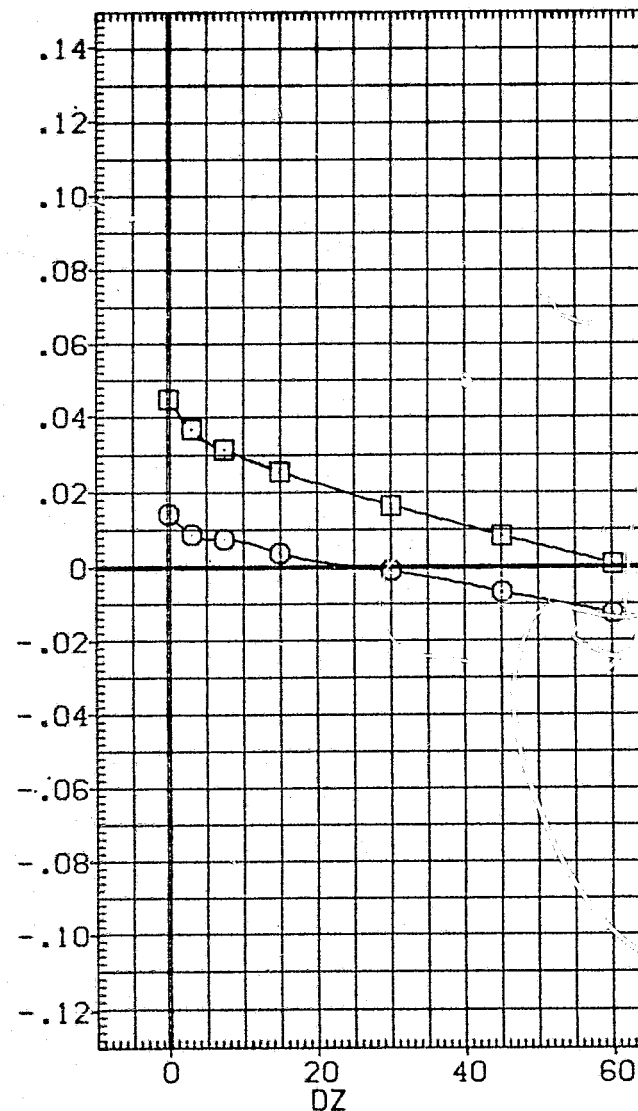
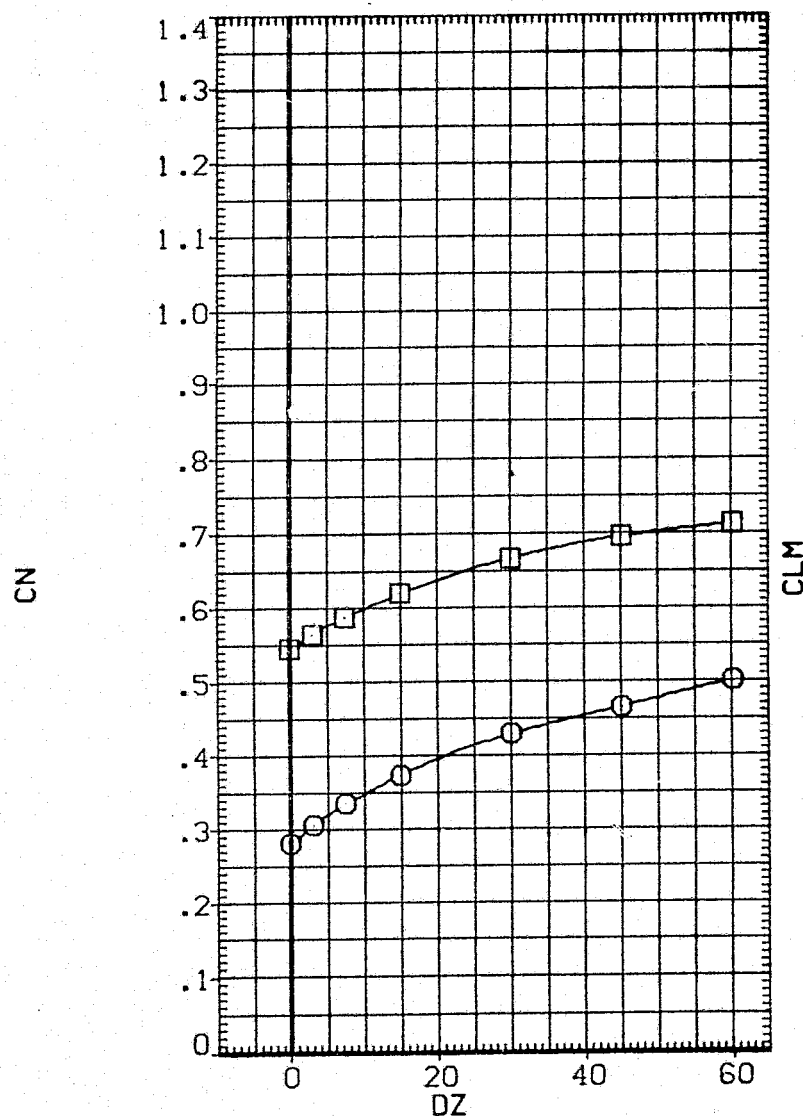


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	ELV-18	PARAMETRIC VALUES	ELV-08	
○	10.000		.000	.000	
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	.000	ALPHAC	8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

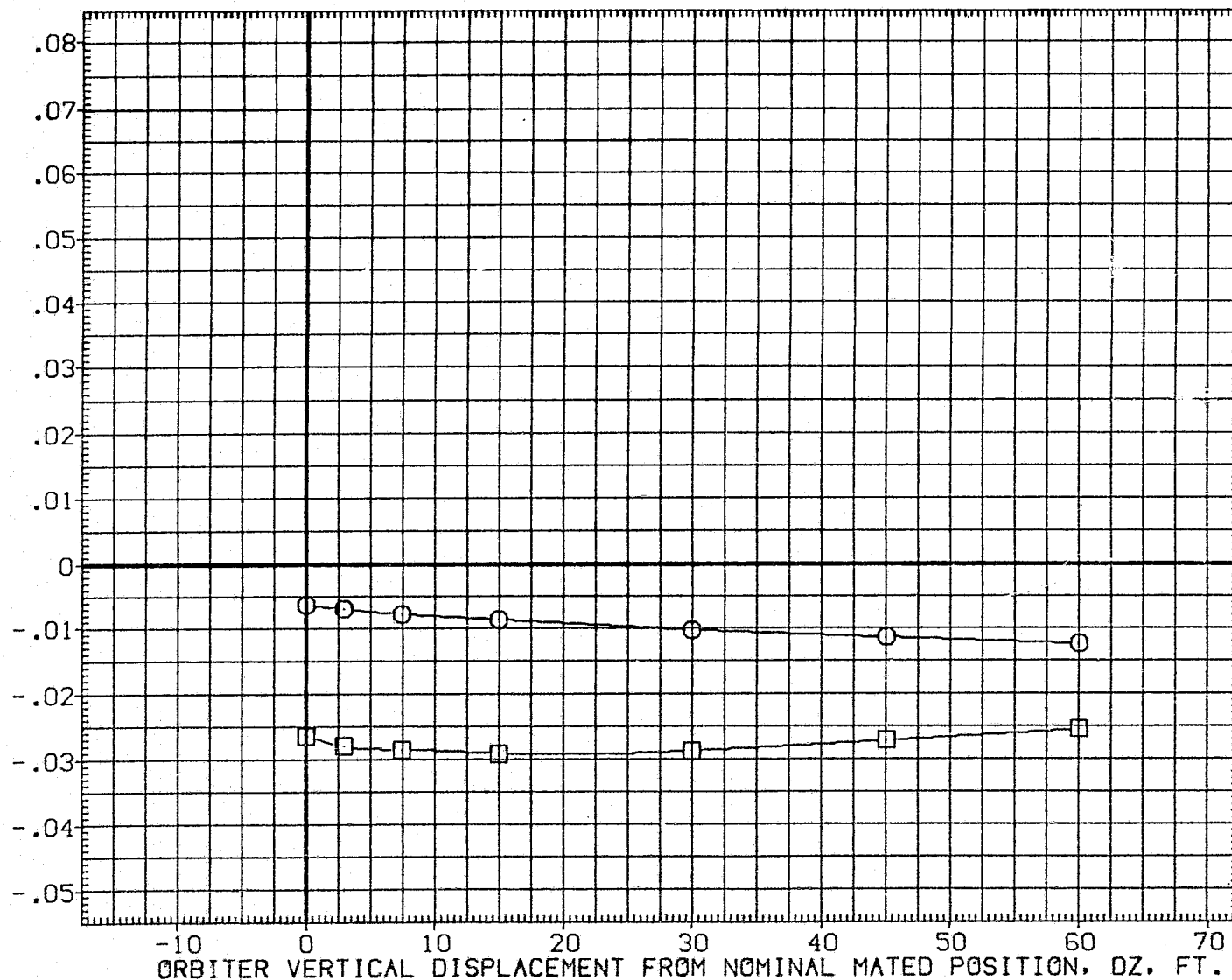


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN123)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC .000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

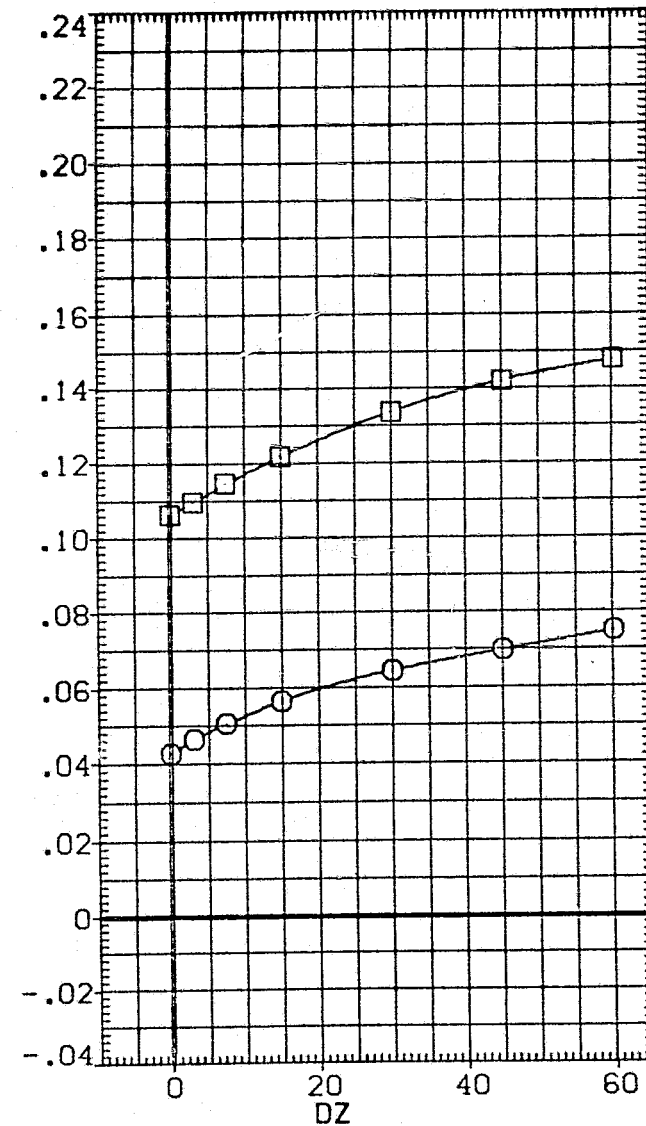
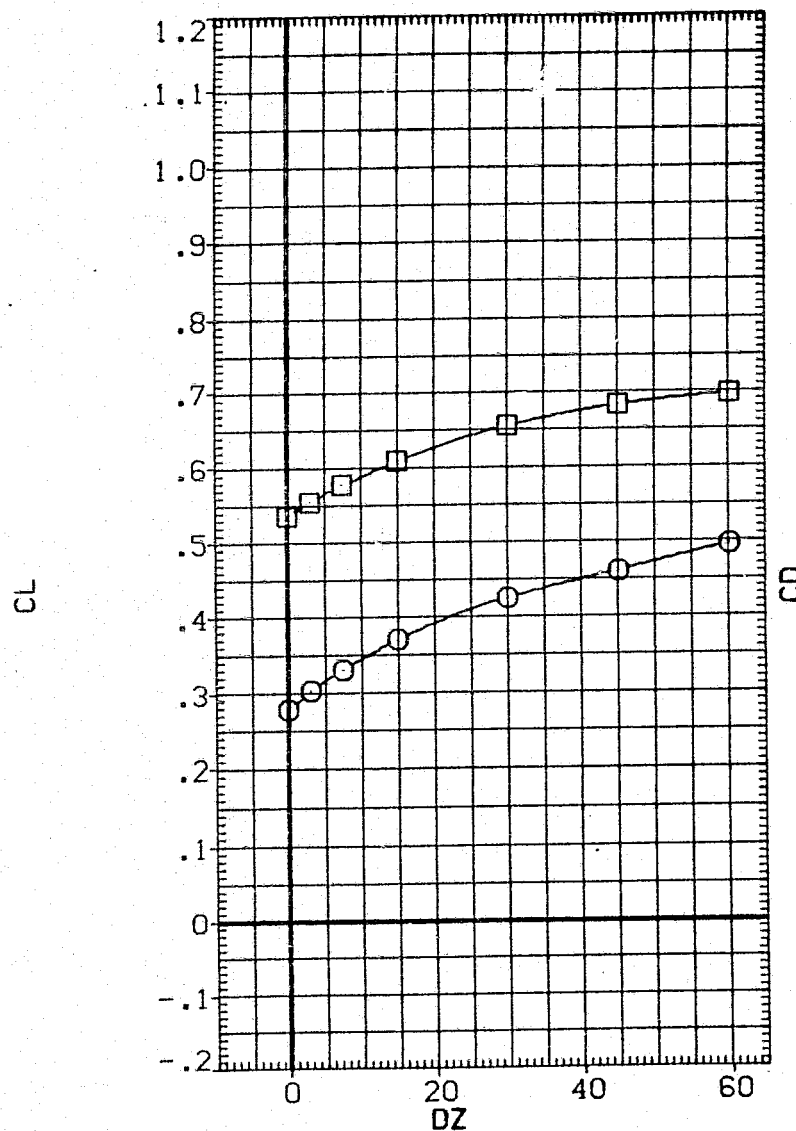


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN123)

SYMBOL	ALPHA0	ELV-1B	PARAMETRIC VALUES	ELV-0B
○	10.000	ELEVON	.000	.000
□	14.000	BETA0	5.000	.600
		DX	-5.000	.000
		BETAC	.000	10.000
			DY	8.000
			ALPHAC	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

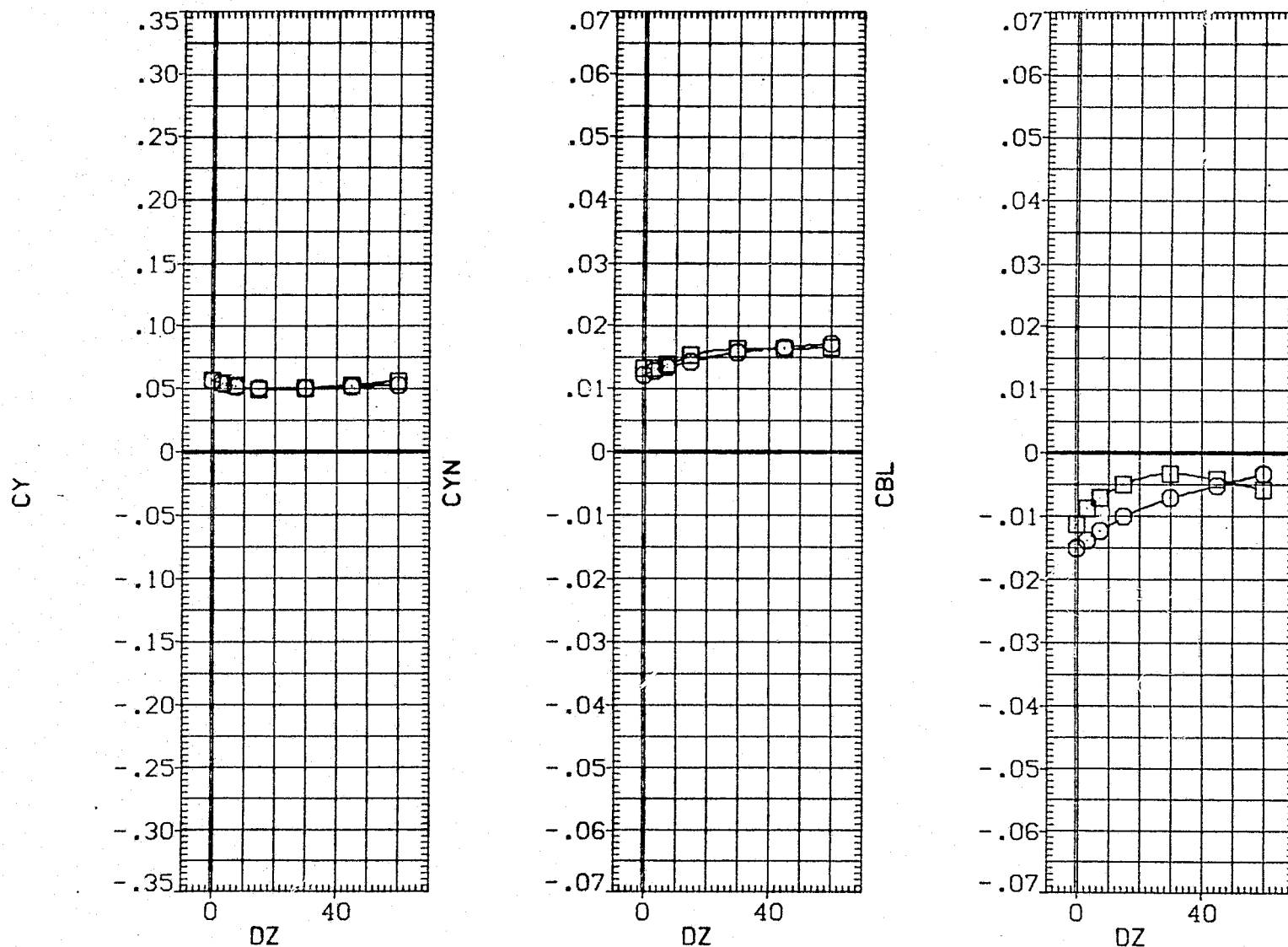


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (123 - 007)(VGN123)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-IB

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

10.000

BETAC

ELV-OB

MACH

DX

BETA0

.000

.000

.600

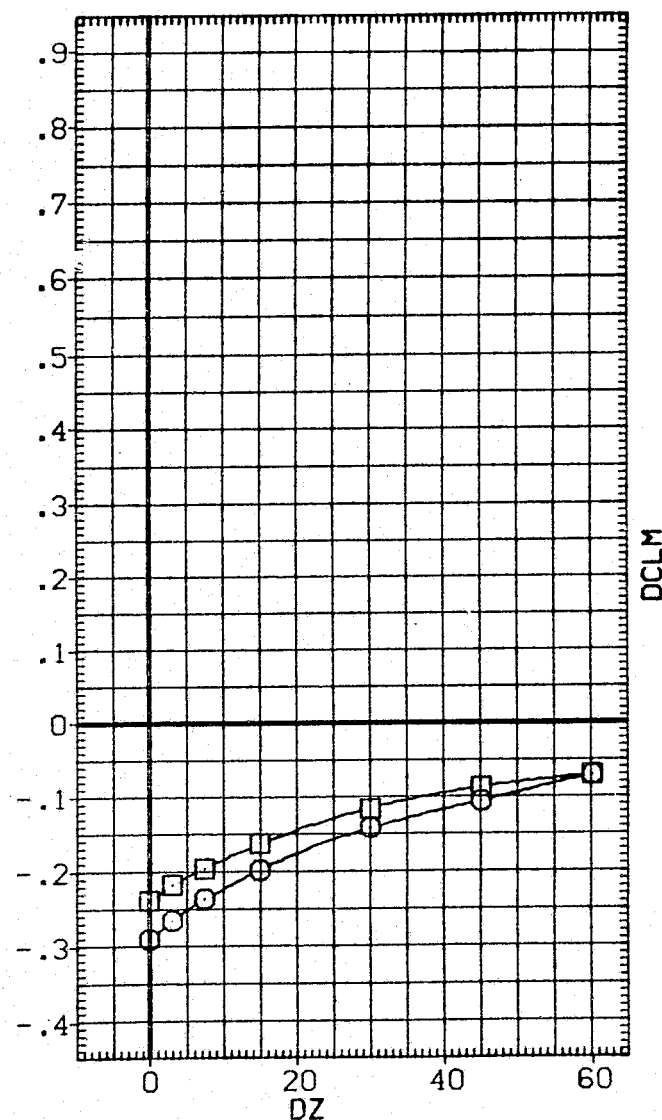
.000

-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

DCN



DCLM

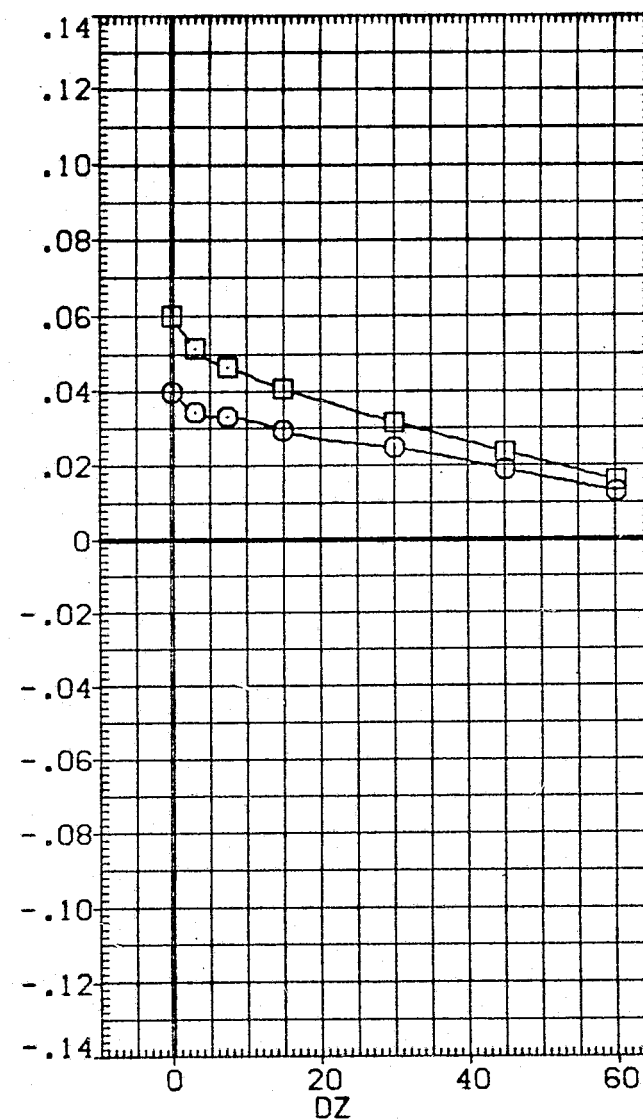


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL

○
□

ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

BETAC

ELV-0B

MACH

DX

BETA0

.000

.000

.600

.000

-5.000

REFERENCE INFORMATION

SREF 2690.0000

50. FT.

LREF 474.8100

IN.

BREF 936.6800

IN.

XMRP 1109.0000

IN. XC

YMRP .0000

IN. YO

ZMRP 375.0000

IN. ZO

SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

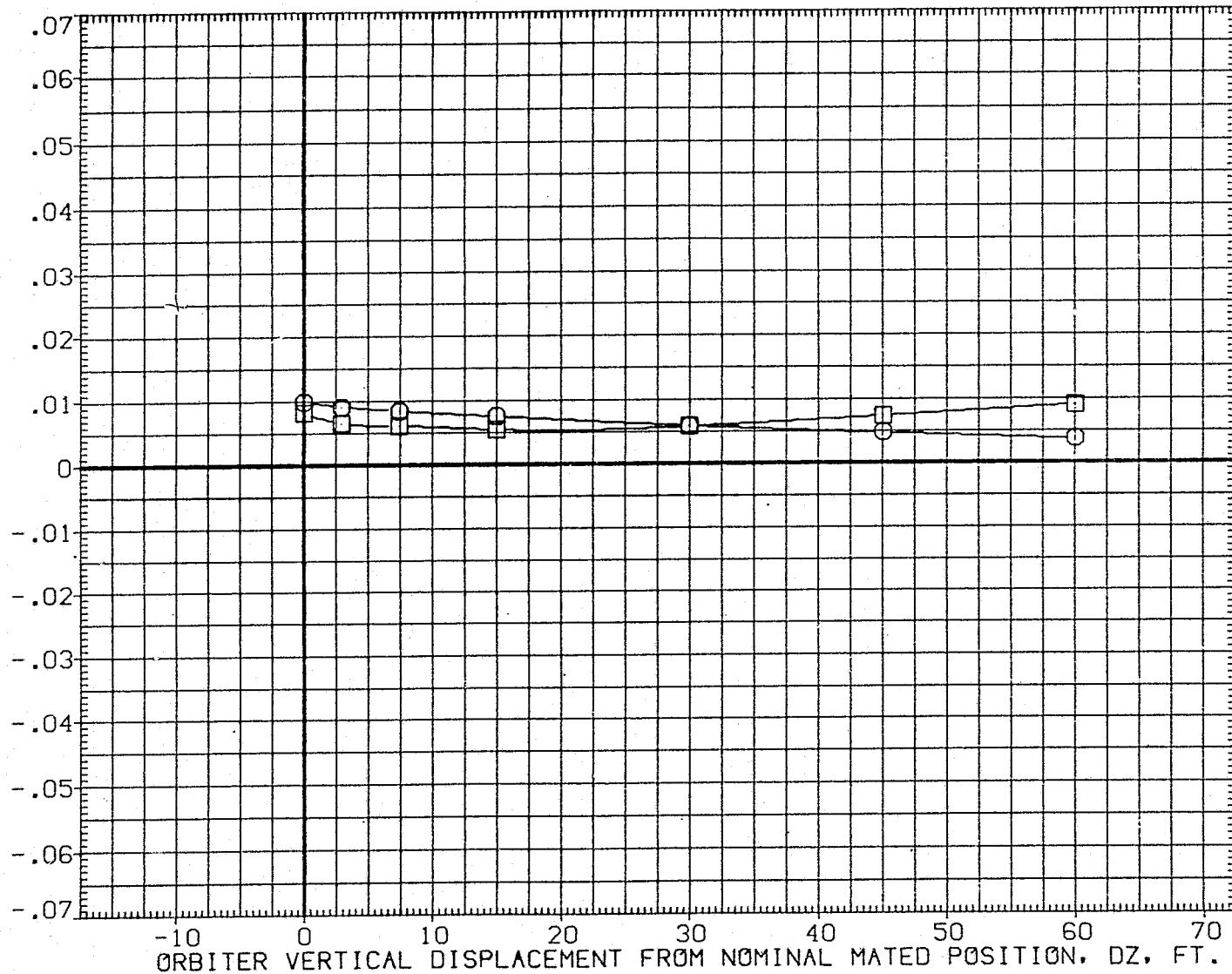


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (123 - 007) (VGN123)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ALPHAC 8.000 BETAC .000
□	14.000	ELV-1B .000 ELV-0B .000
		ELEVON 5.000 MACH .600
		PHI .000 DX .000
		DY 10.000 BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

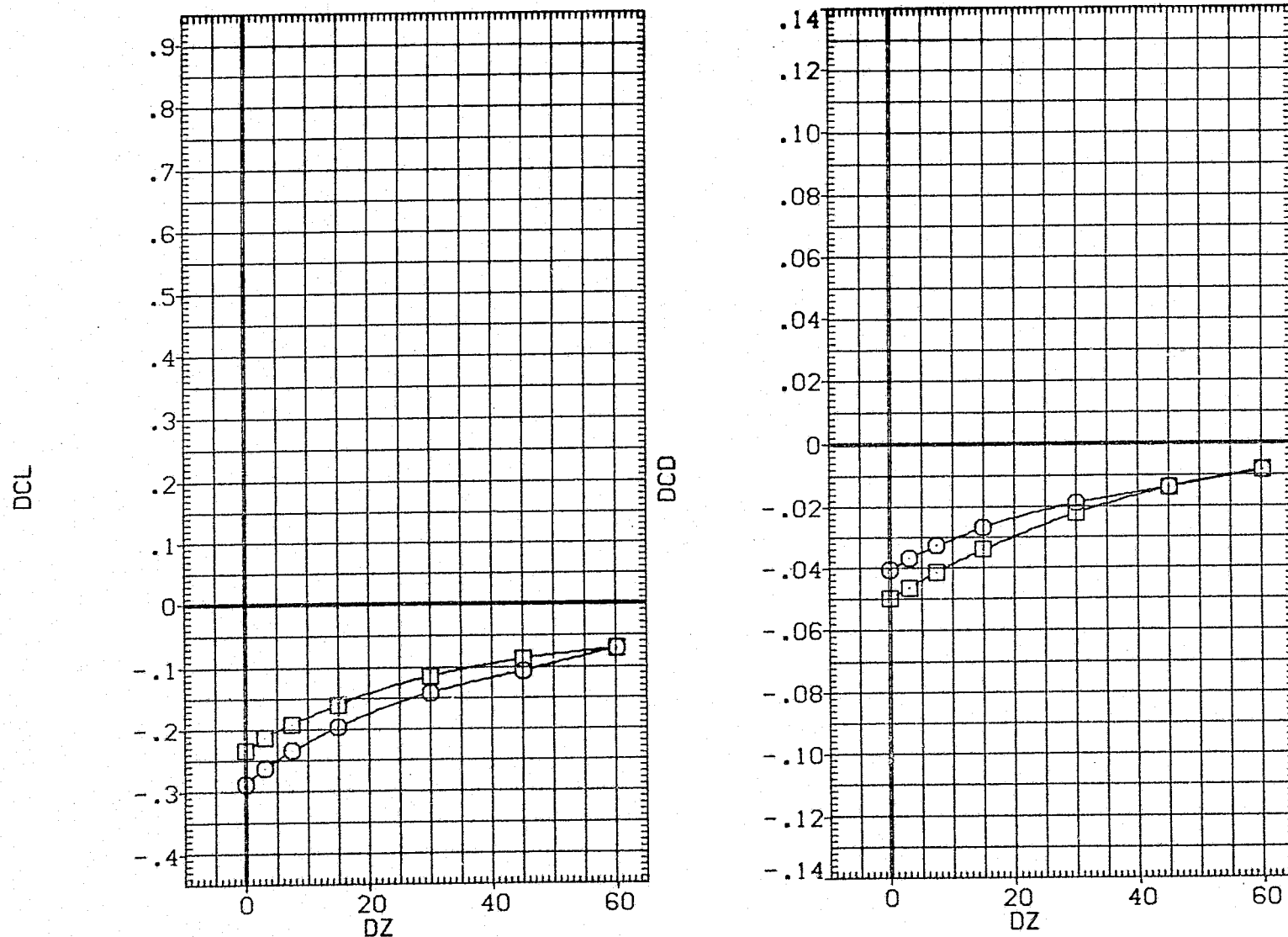


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B .000
□	14.000	ELEVON 5.000 MACH .600
	BETA0 -5.000	PHI .000
	DX .000	DY 10.000
	BETAC 5.000	ALPHAC 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

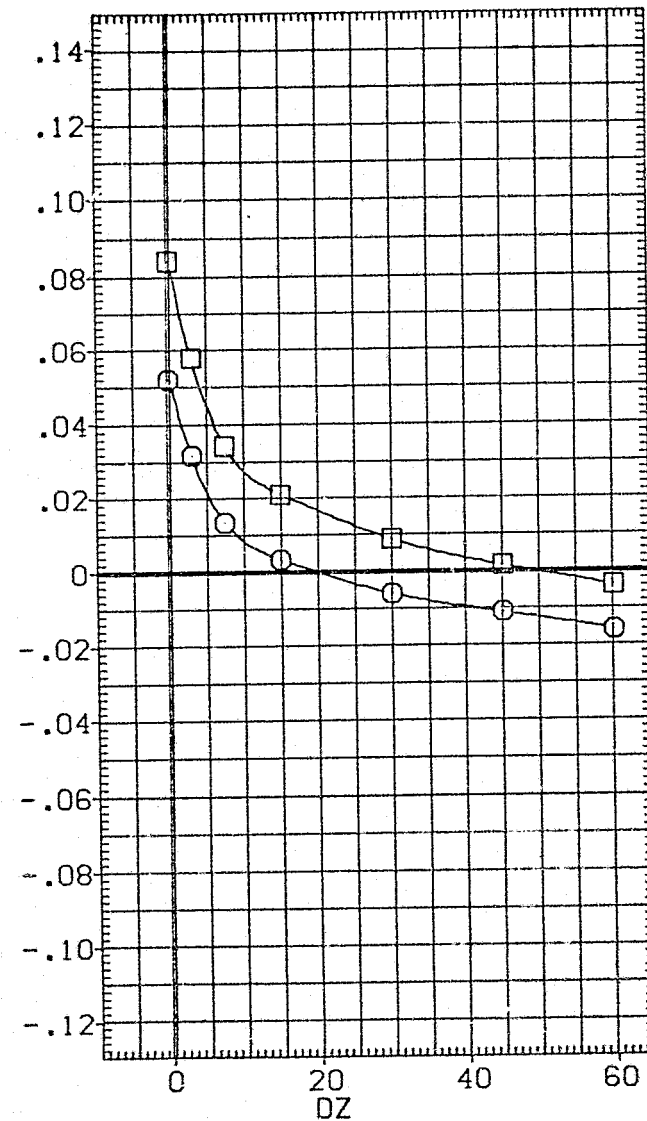
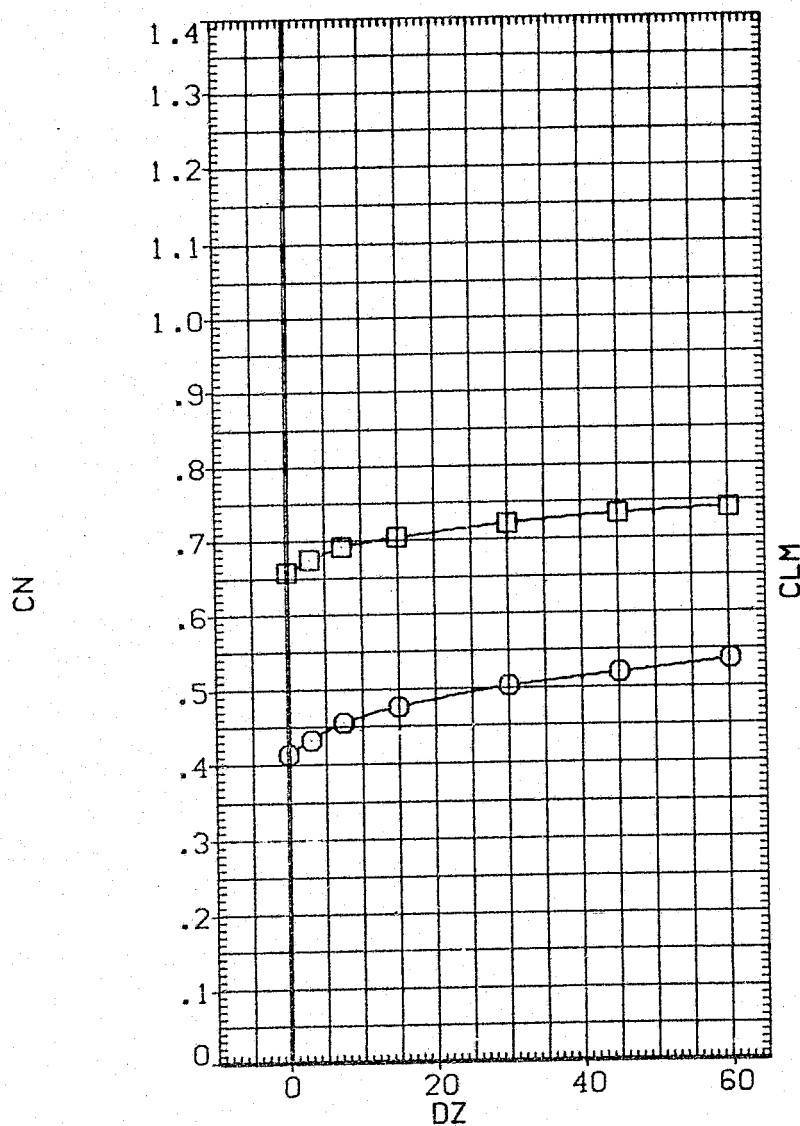


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN124)

SYMBOL		PARAMETRIC VALUES				
○	ALPHA0	10.000	ELV-IB	.000	ELV-OB	.000
□	14.000	ELEVON	5.000	MACH	.600	
	BETA0	-5.000	PHI	.000		
	DX	.000	DY	10.000		
	BETAC	5.000	ALPHAC	4.000		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

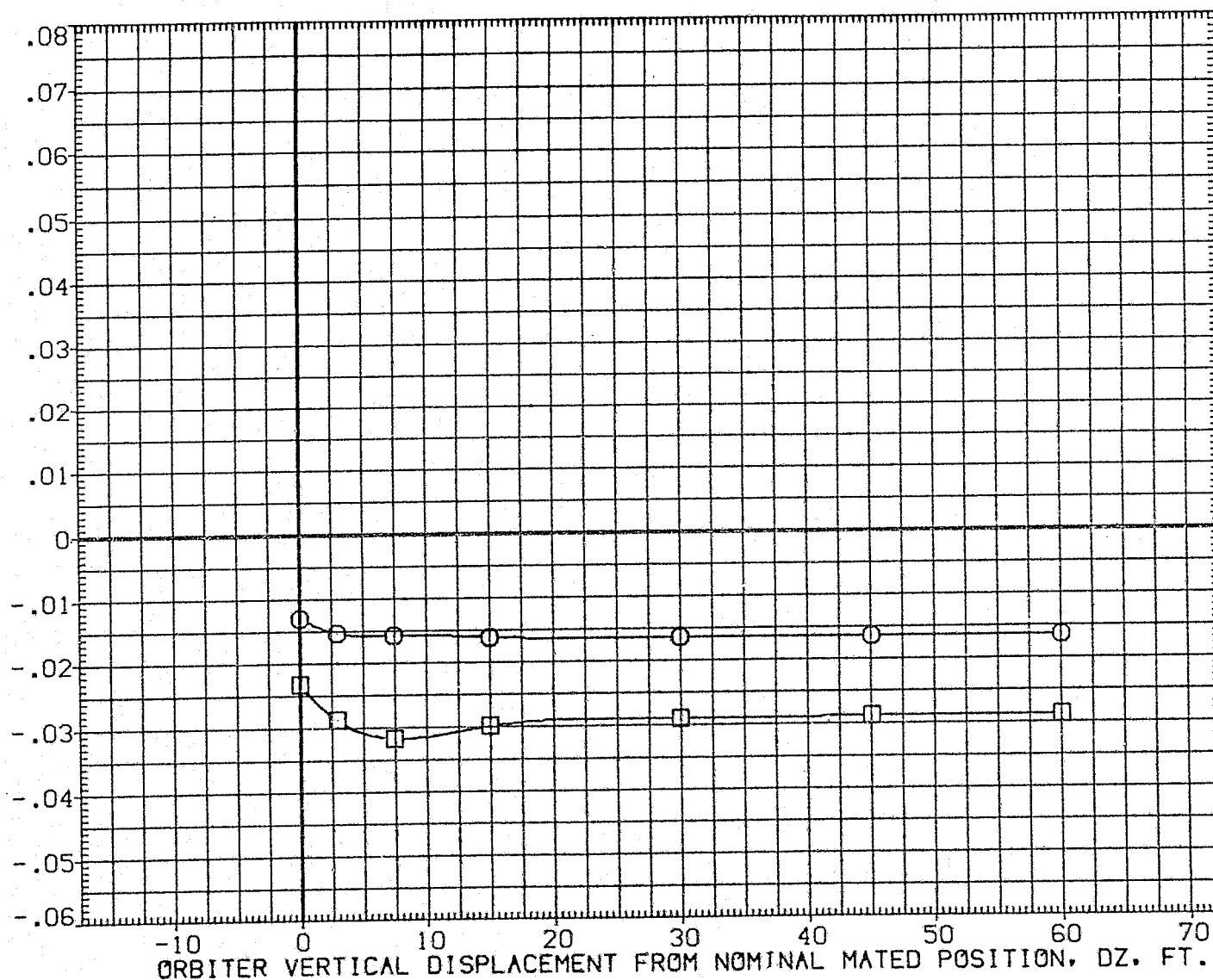


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ELV-IB	.000	ELV-OB	.000
□	14.000	ELEVON	5.000	MACH	.600
		BETA0	-5.000	PHI	.000
		DX	.000	DY	10.000
		BETAC	5.000	ALPHAC	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	935.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

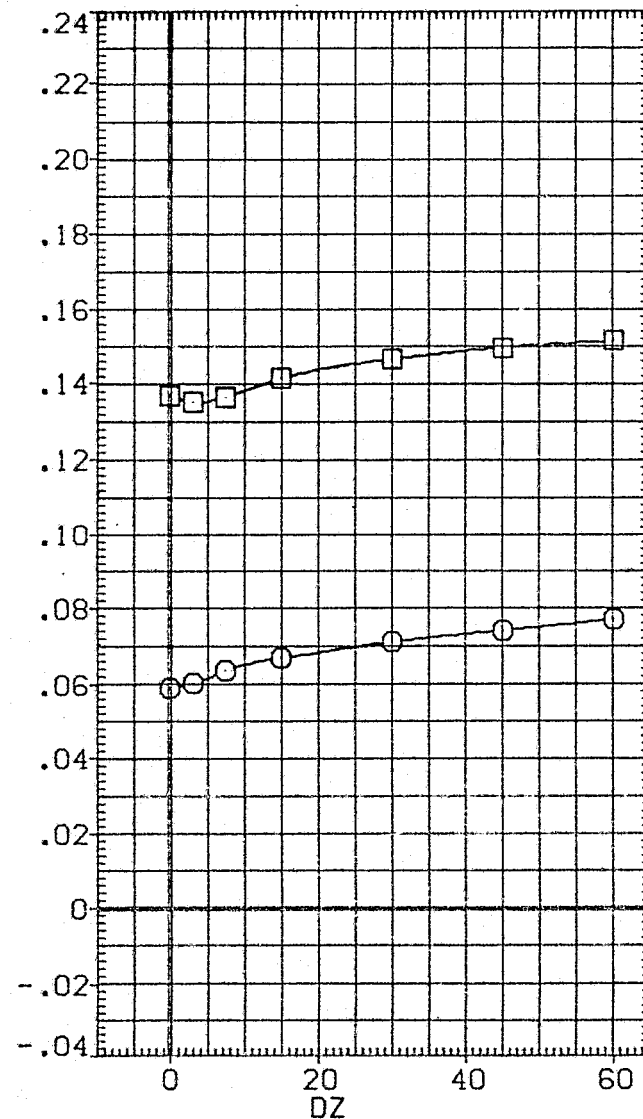
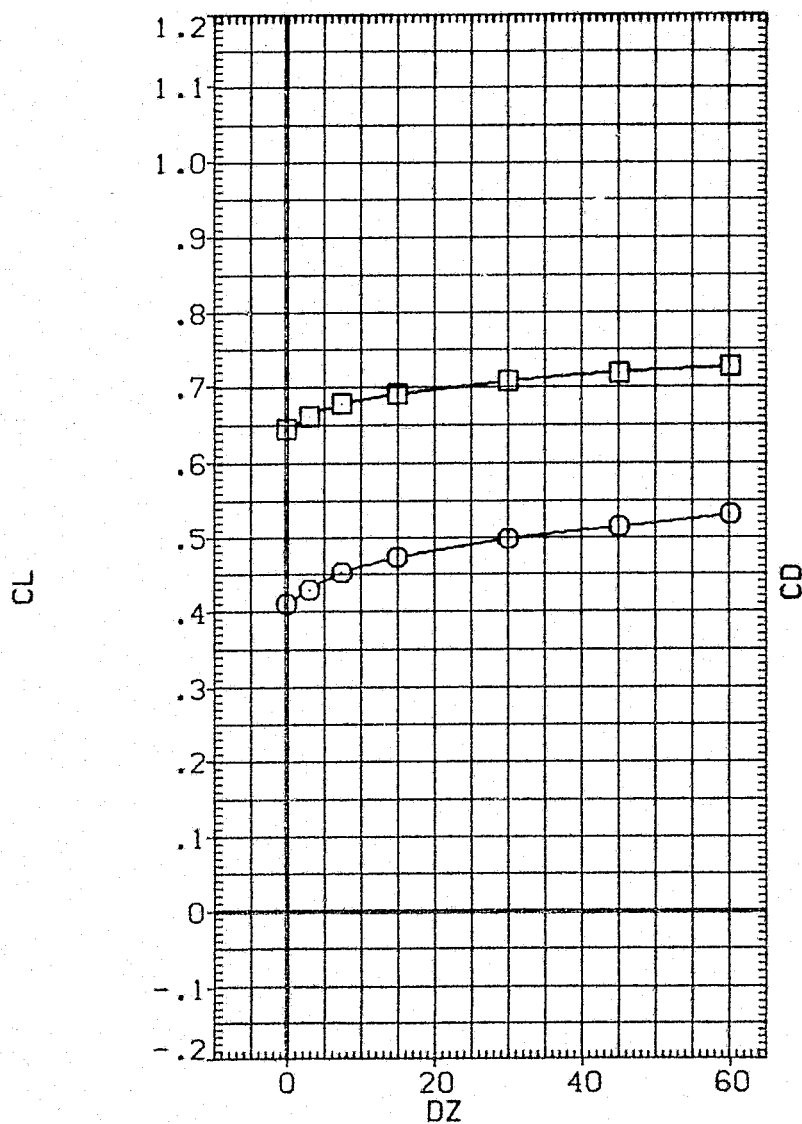


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)



CA20 747/1 01 S1

ORBITER DATA(NGN124)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-18 .000	ELV-08 .000
□	14.000	ELEVON 5.000	MACH .600
		BETA0 -5.000	PHI .000
		DX .000	DY 10.000
		BETAC 5.000	ALPHAC 4.000

REFERENCE INFORMATION	
SREF	2690.0000 SQ.FT.
LREF	474.8100 IN.
BREF	936.6800 IN.
XMRP	1109.0000 IN.X0
YMRP	.0000 IN.Y0
ZMRP	375.0000 IN.Z0
SCALE	.0300

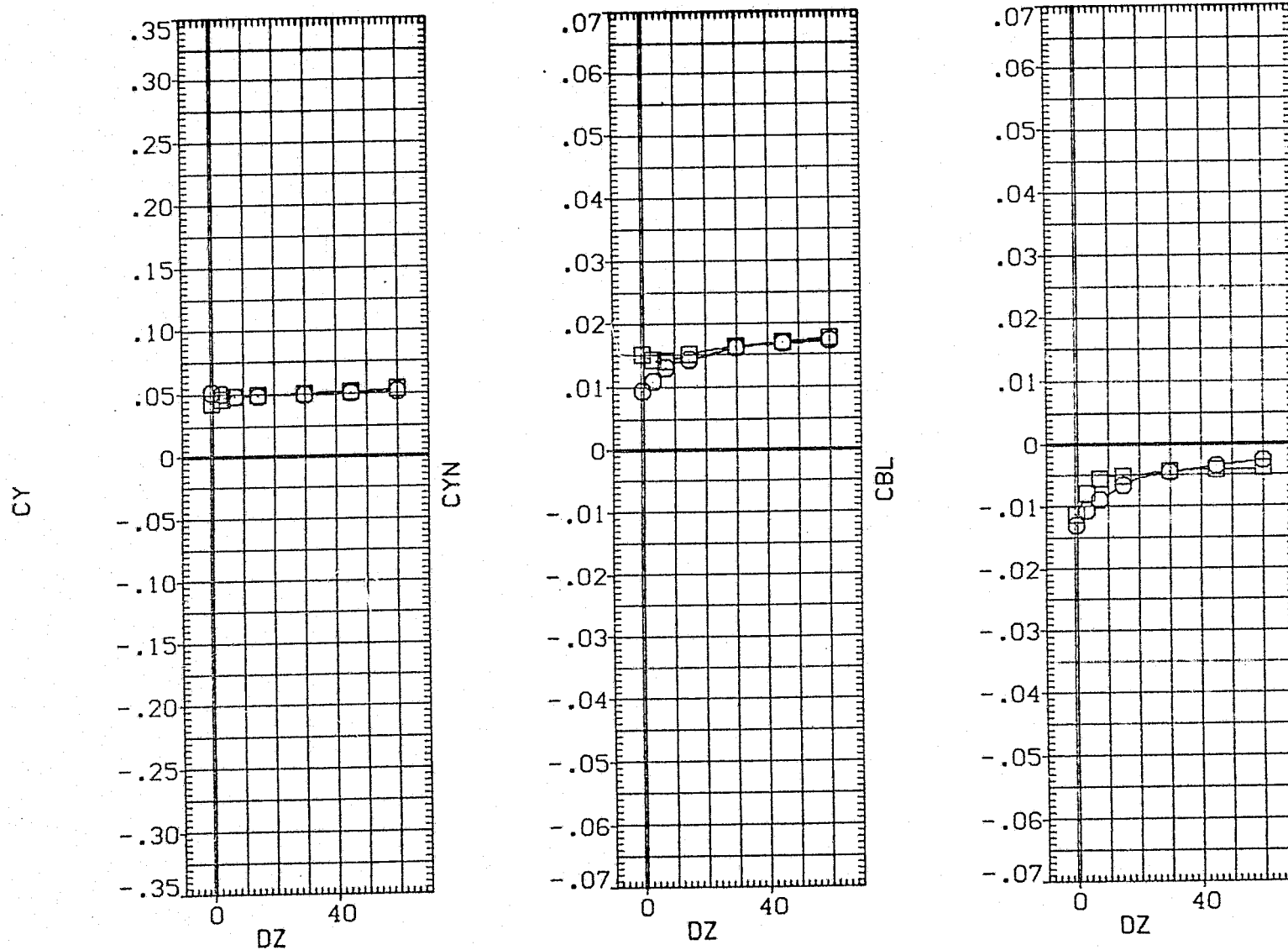


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	BETAC	5.000
○	10.000	ALPHAC	4.000	
□	14.000	ELV-1B	.000	ELV-0B .000
		ELEVON	5.000	MACH .600
		PHI	.000	DX .000
		DY	10.000	BETA0 -5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

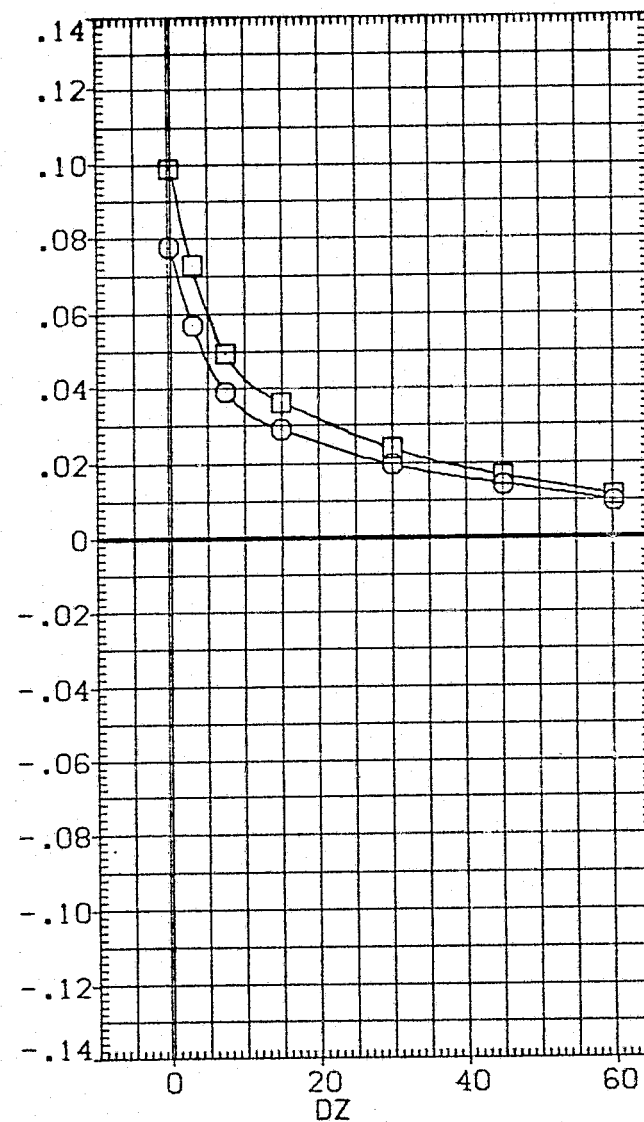
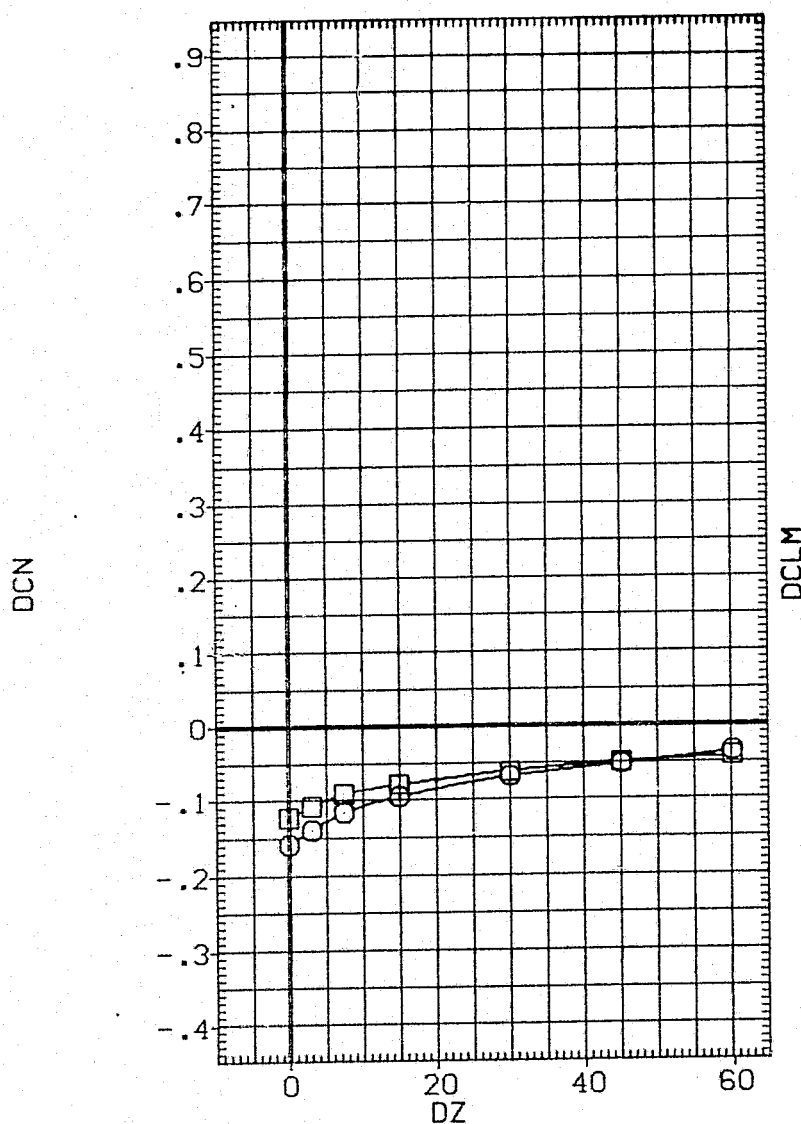


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (124 - 007)(VGN124)

SYMBOL

○

□

ALPHA0

10.000

ALPHAC

PARAMETRIC VALUES

4.000

BETAC

5.000

ELV-1B

.000

ELV-0B

.000

ELEVON

5.000

MACH

.600

PHI

.000

DX

.000

DY

10.000

BETA0

-5.000

REFERENCE INFORMATION

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN.X0

YMRP

.0000

IN.Y0

ZMRP

375.0000

IN.Z0

SCALE

.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

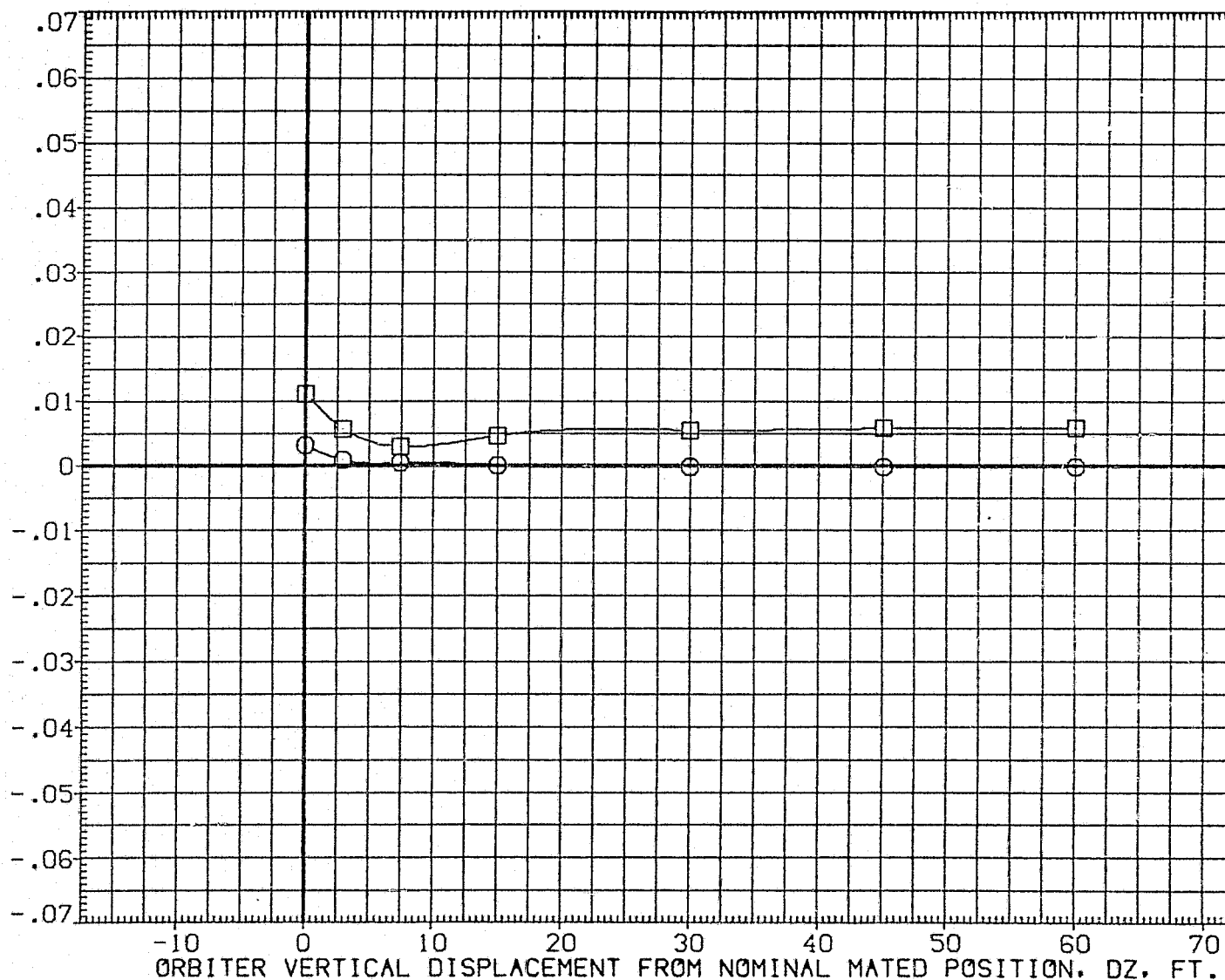


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	4.000	BETAC	5.000
□	14.000	ELV-18	.000	ELV-08	.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

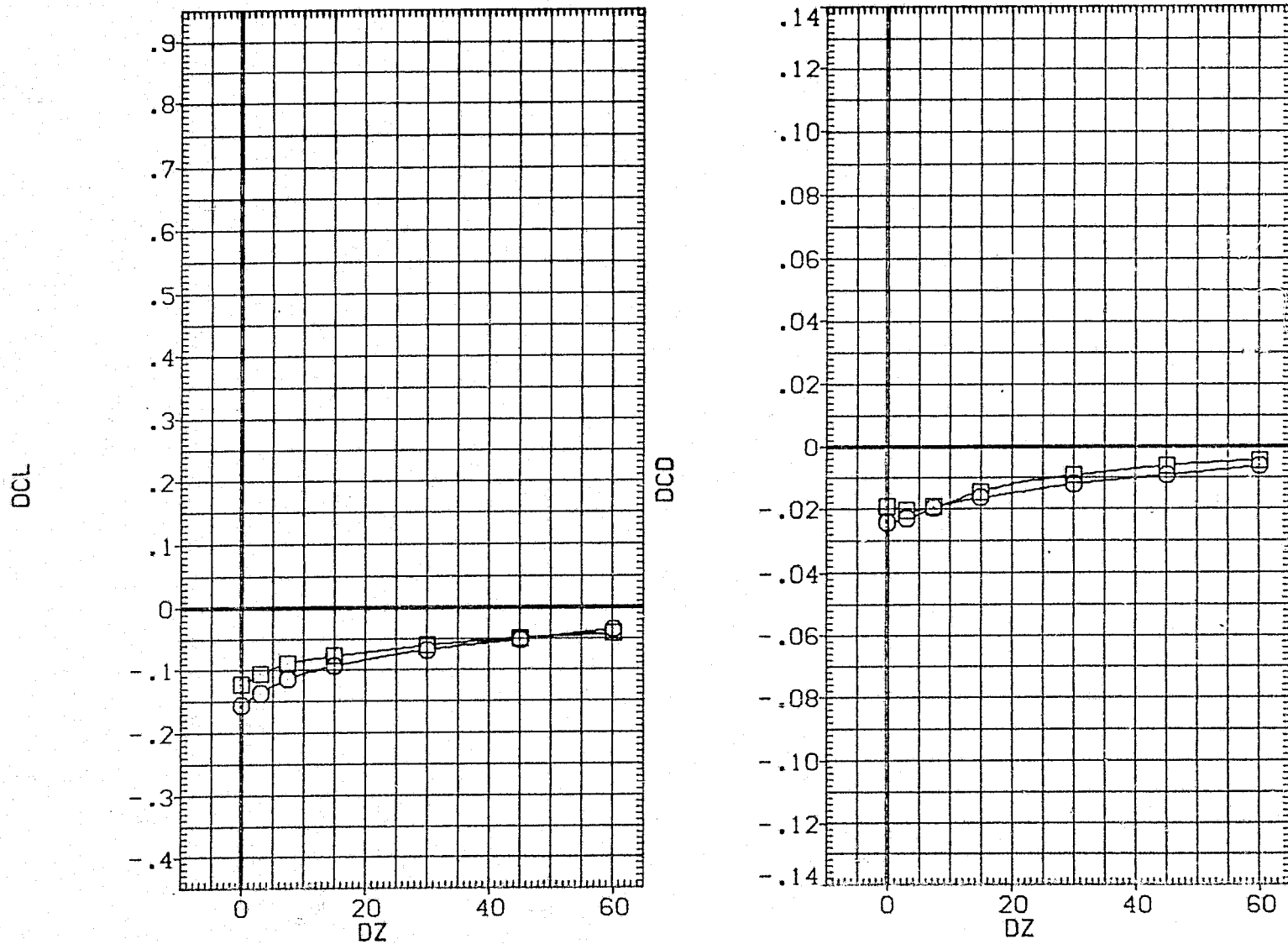


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN125)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-1B .000 ELV-0B .000
□	14.000	ELEVON 5.009 MACH .600
	BETA0 -5.000	PHI .000
	DX .000	DY 10.000
	BETAC 5.000	ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

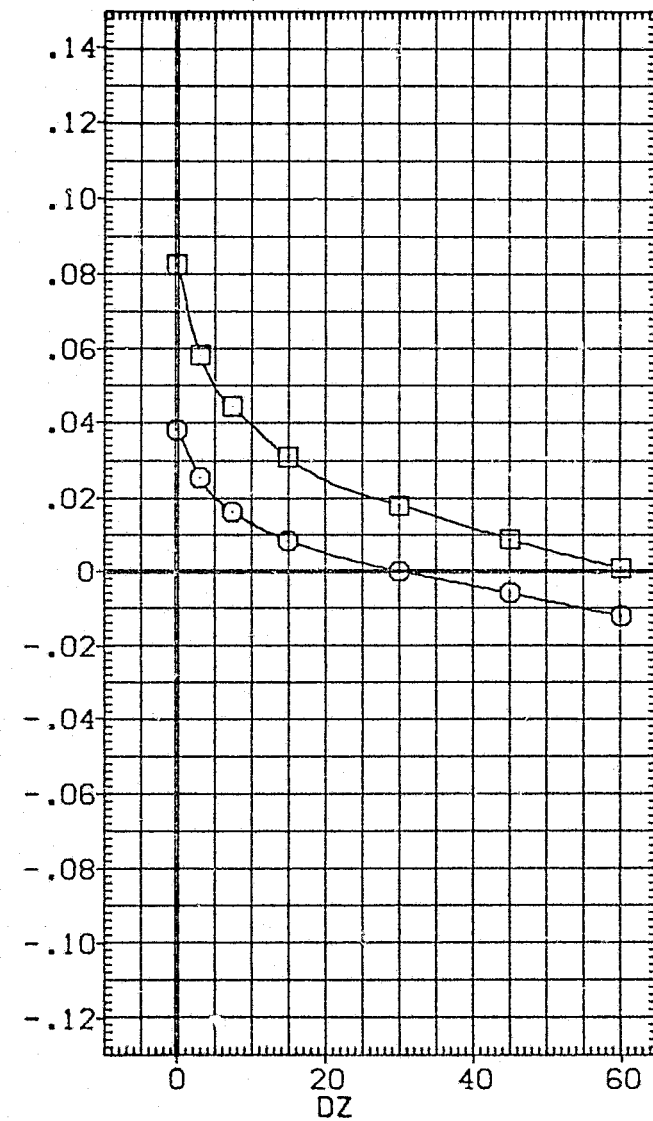
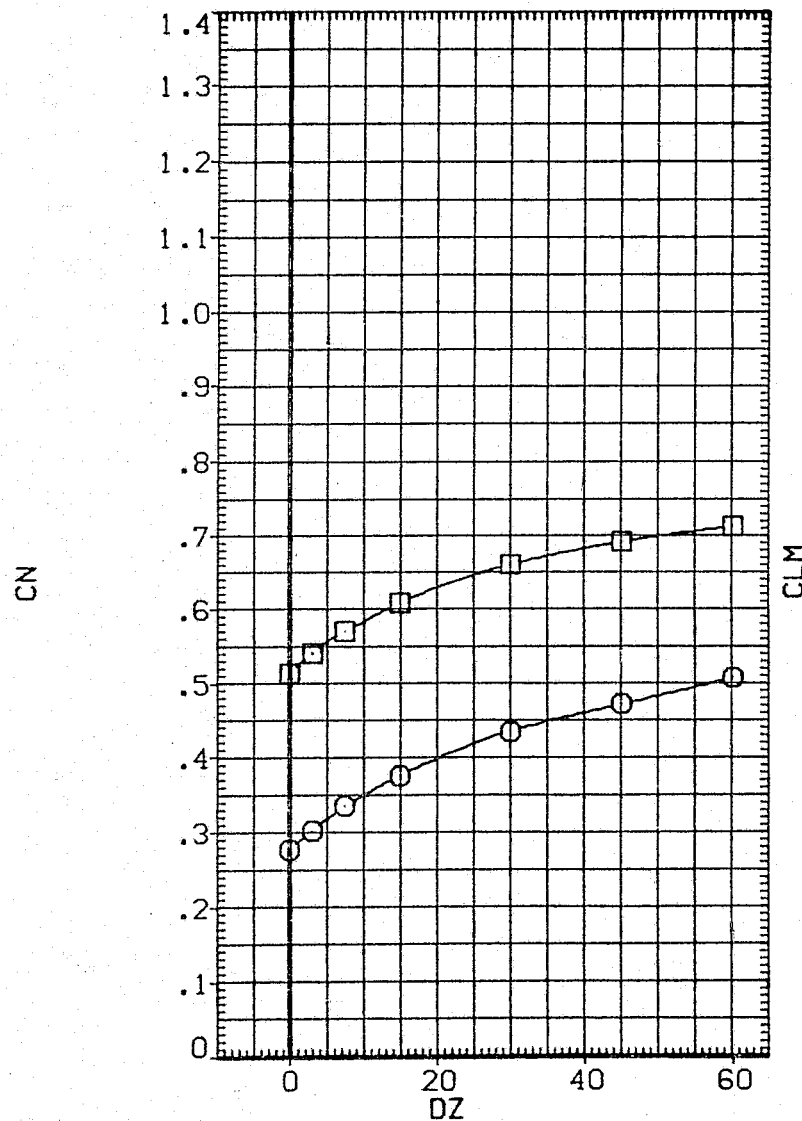


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA (NGN125)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC 5.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

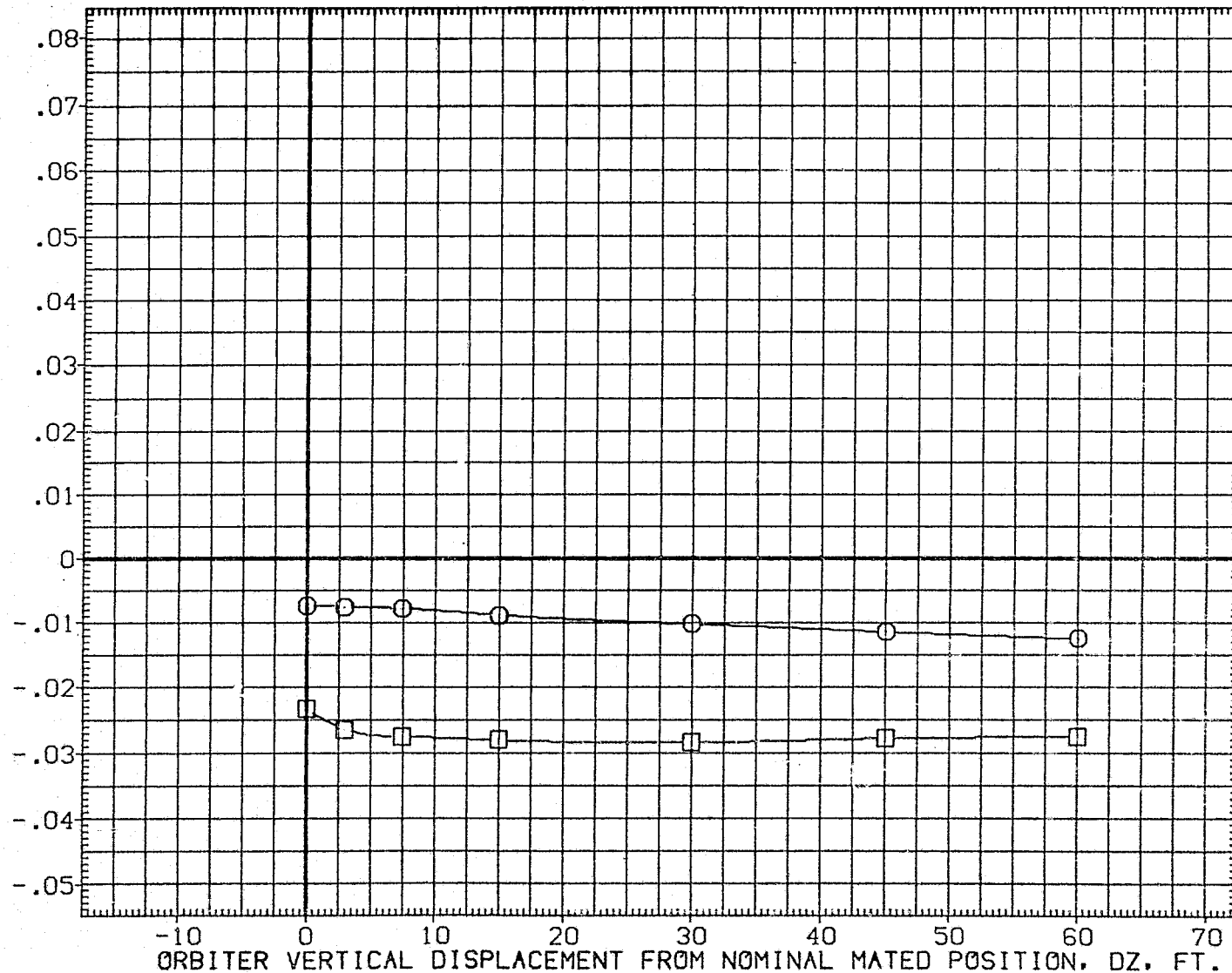


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 747/1 01 S1

ORBITER DATA(NGN125)

SYMBOL	ALPHA0	PARAMETRIC VALUES
○	10.000	ELV-IB .000 ELV-OB .000
□	14.000	ELEVON 5.000 MACH .600
		BETA0 -5.000 PHI .000
		DX .000 DY 10.000
		BETAC 5.000 ALPHAC 8.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

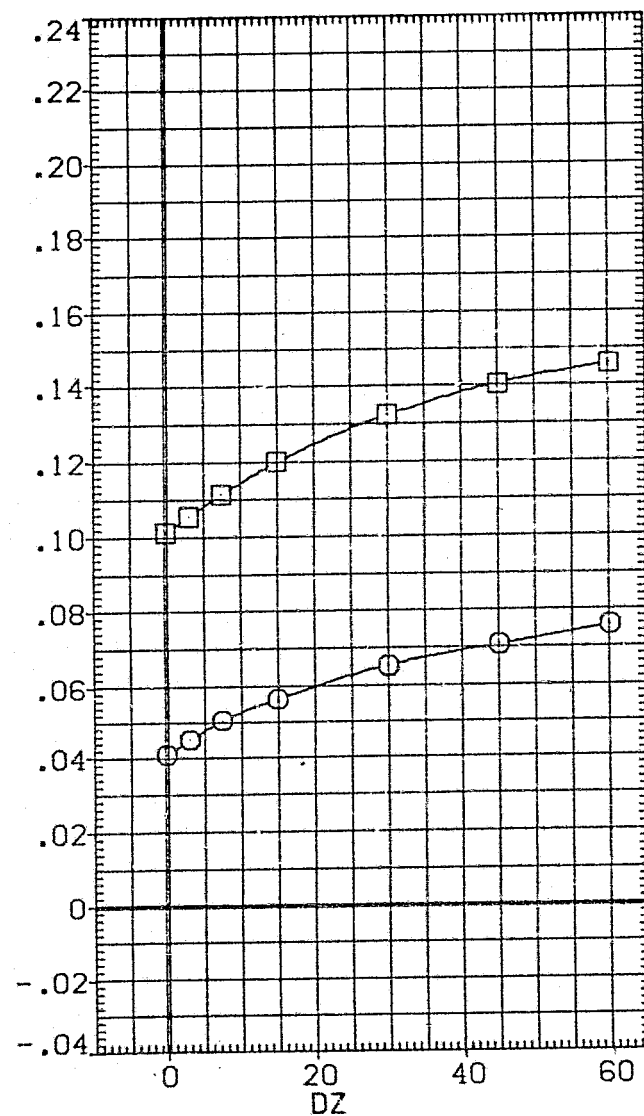
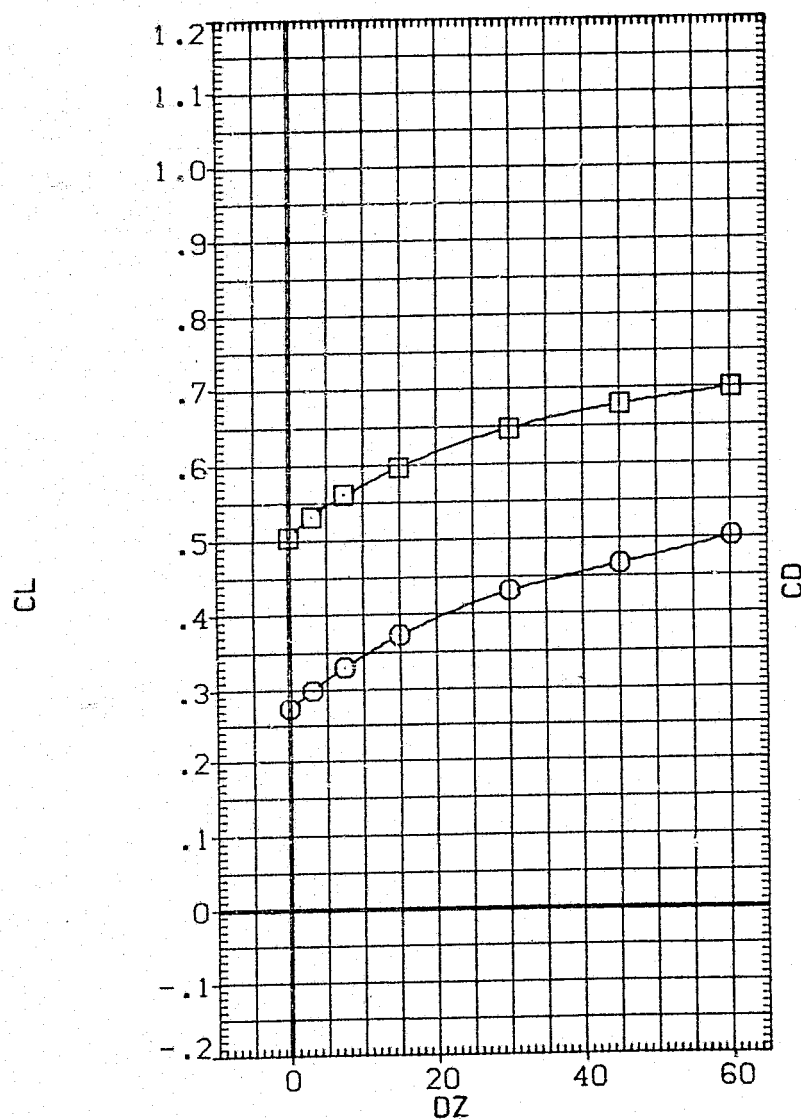


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL	ALPHA0	PARAMETRIC VALUES	
○	10.000	ELV-IB .000	ELV-OB .000
□	14.000	ELEVON 5.000	MACH .600
		BETA0 -5.000	PHI .000
		DX .000	DY 10.000
		BETAC 5.000	ALPHAC 8.000

REFERENCE INFORMATION

SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

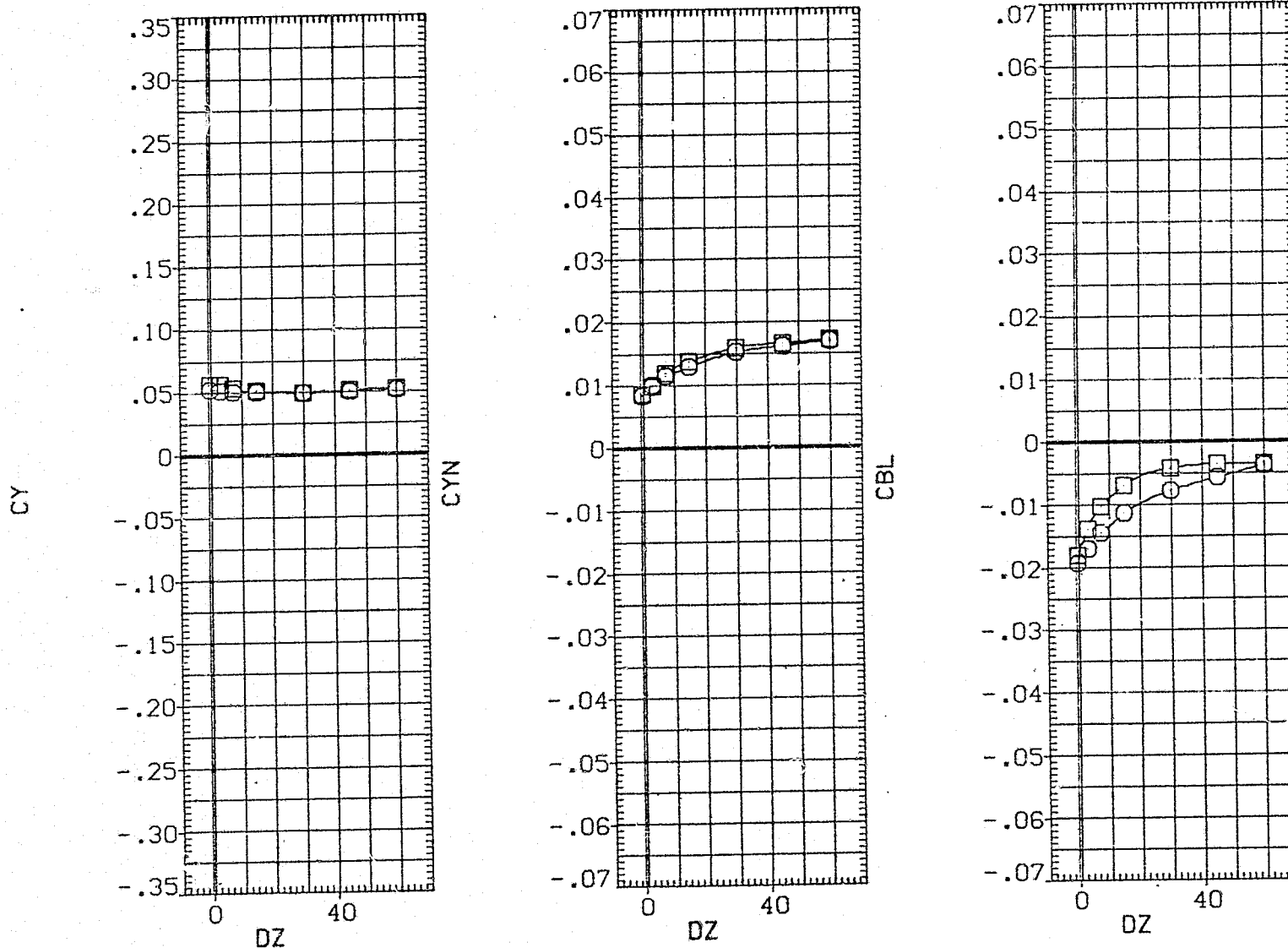


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (125 - 007) (VGN125)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	5.000
□	14.000	ELV-1B	.000	ELV-0B	.000
		ELEVON	5.000	MACH	.600
		PHI	.000	OX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

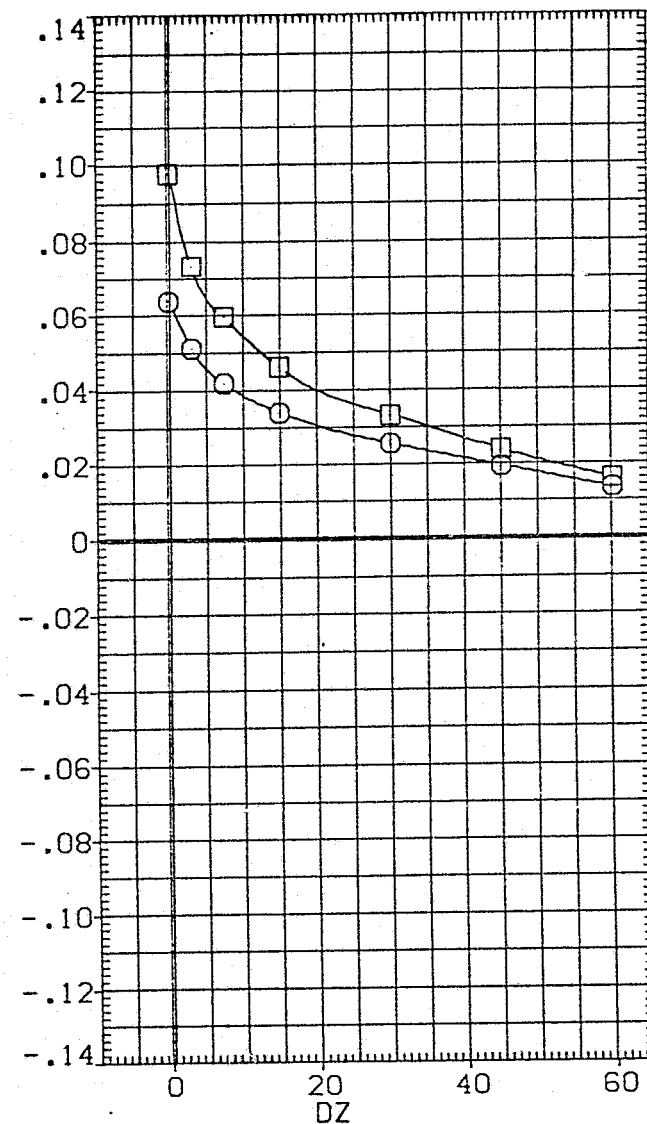
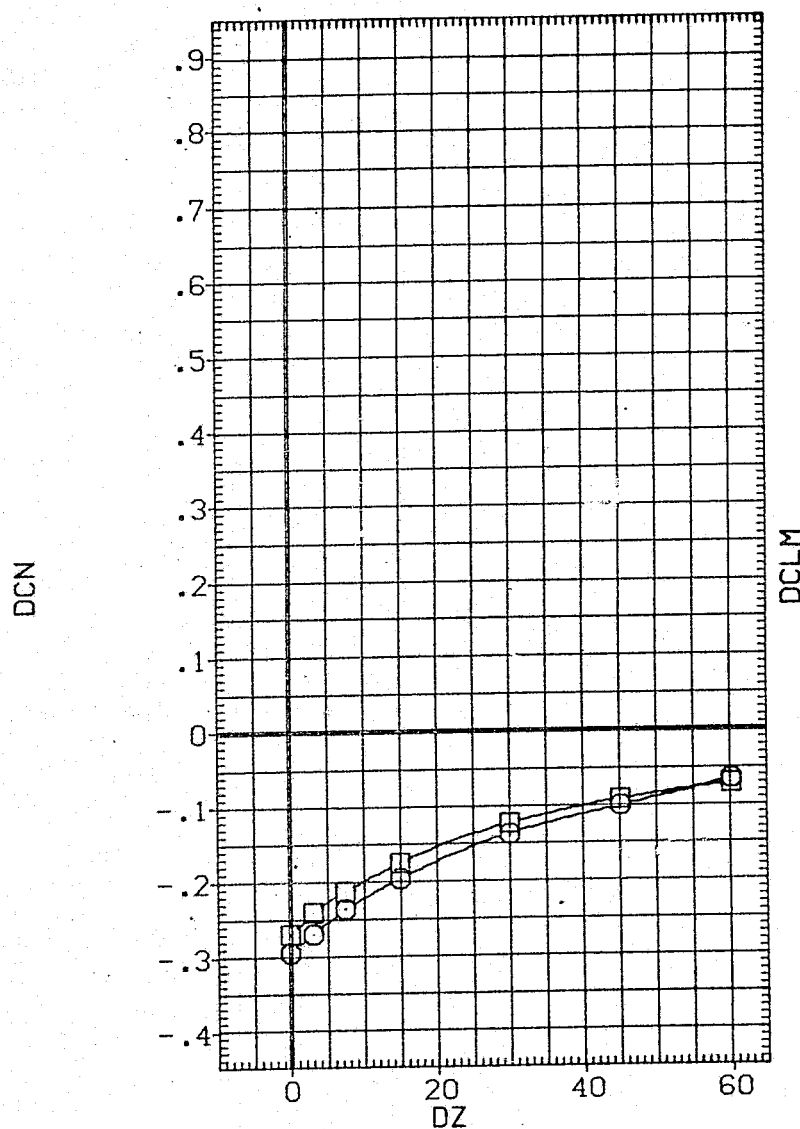


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

SYMBOL



ALPHA0

10.000

14.000

ALPHAC

ELV-1B

ELEVON

PHI

DY

PARAMETRIC VALUES

8.000

.000

5.000

.000

10.000

BETAC

ELV-0B

MACH

DX

BETA0

5.000

.000

.600

.000

-5.000

REFERENCE INFORMATION

SREF 2690.0000

LREF 474.9100

BREF 936.6800

XMRP 1109.0000

YMRP .0000

ZMRP 375.0000

SCALE .0300

SQ.FT.

IN.

IN.

IN.X0

IN.Y0

IN.Z0

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

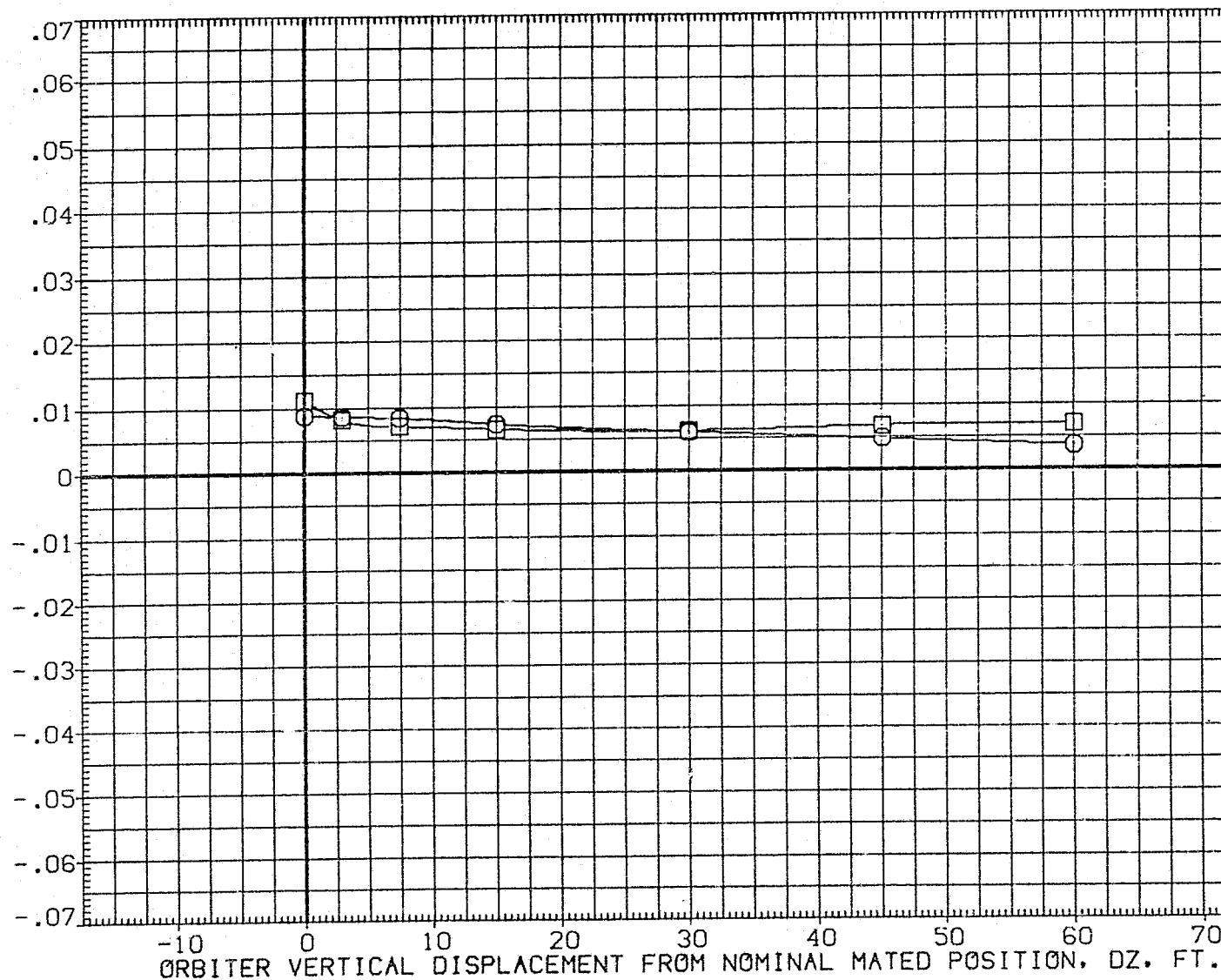


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

CA20 (747/1 01 S1) - (01 S1)

D/S (125 - 007) (VGN125)

SYMBOL	ALPHA0	PARAMETRIC VALUES			
○	10.000	ALPHAC	8.000	BETAC	5.000
□	14.000	ELV-IB	.000	ELV-OB	.000
		ELEVON	5.000	MACH	.600
		PHI	.000	DX	.000
		DY	10.000	BETA0	-5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

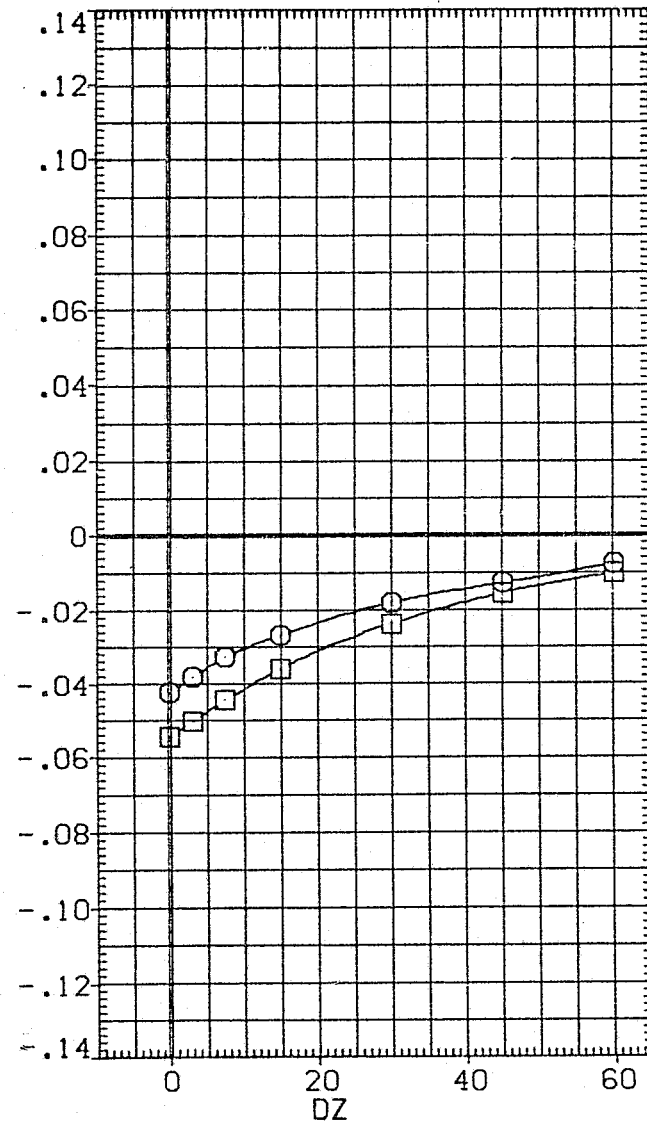
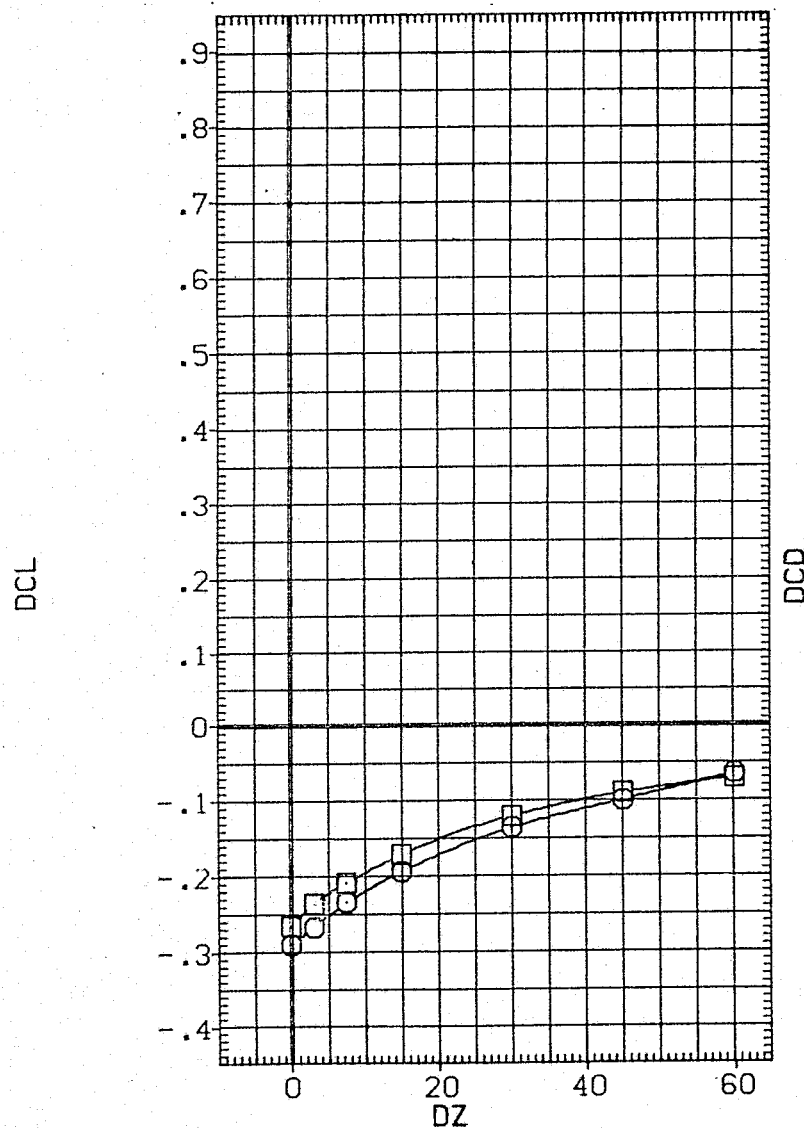


FIG 31 VARIATION OF ORBITER CHARACTERISTICS WITH DELTA Z (ELEVATOR = 0)

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (MGN142) \square DATA NOT AVAILABLE
 (IGN052) CA20 747/1 01 S1
 (MGN141) \diamond DATA NOT AVAILABLE

CARRIER DATA

ELV-1B	ELV-0B	ALPHAC	DX	REFERENCE INFORMATION		
-10.000	-7.000	4.000	.000	SREF	5500.0000	SQ.FT.
.000	3.000	4.000	.000	LREF	327.7800	IN.
10.000	13.000	4.000	.000	BREF	2348.0400	IN.
				XMRF	1339.9000	IN.XC
				YMRF	.0000	IN.YC
				ZMRF	190.8000	IN.ZC
				SCALE	.0300	

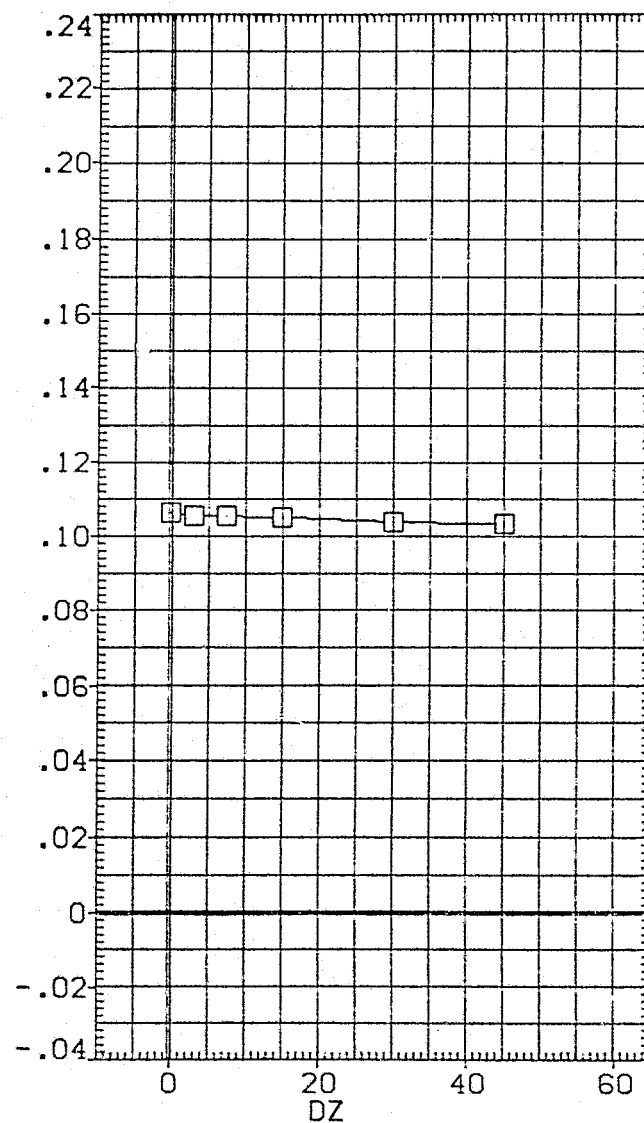
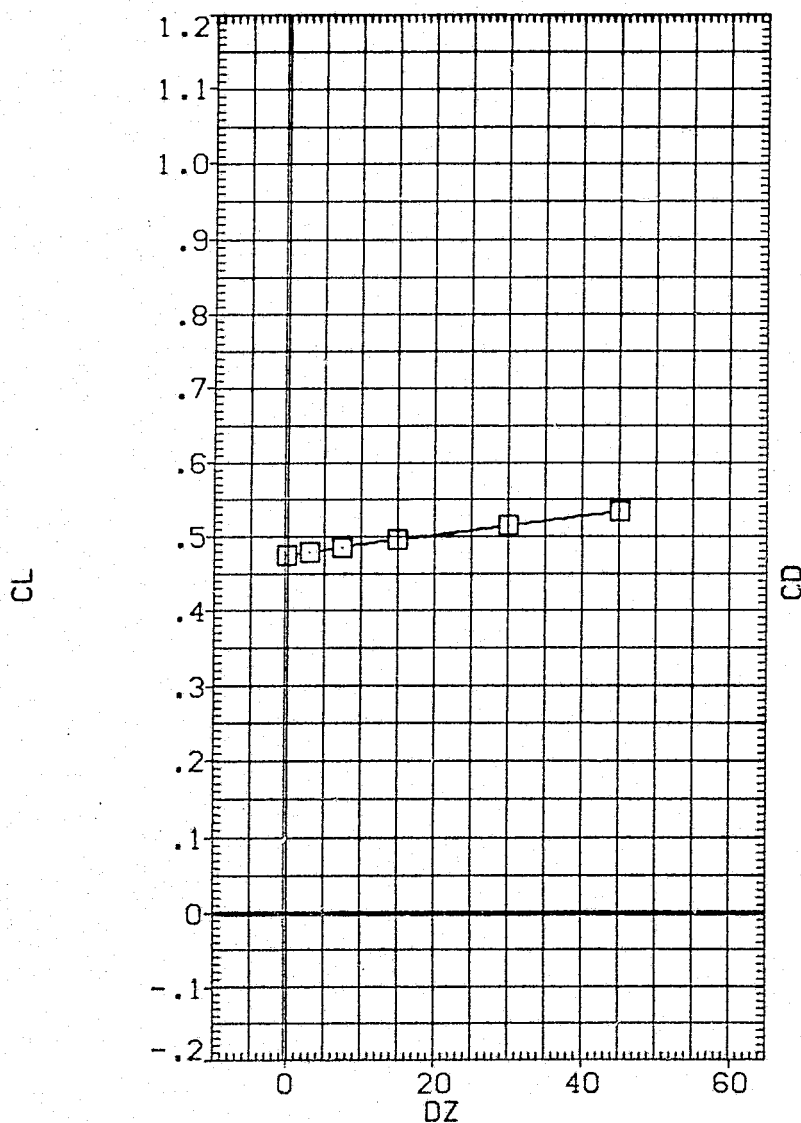


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0 = 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(MGN142)	CA20 747/1 01 S1
(IGN052)	CA20 747/1 01 S1
(MGN141)	CA20 747/1 01 S1

	ELV-1B	ELV-0B	ALPHAC	DX
CARRIER DATA	-10.000	-7.000	4.000	.000
CARRIER DATA	.000	3.000	4.000	.000
CARRIER DATA	10.000	13.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

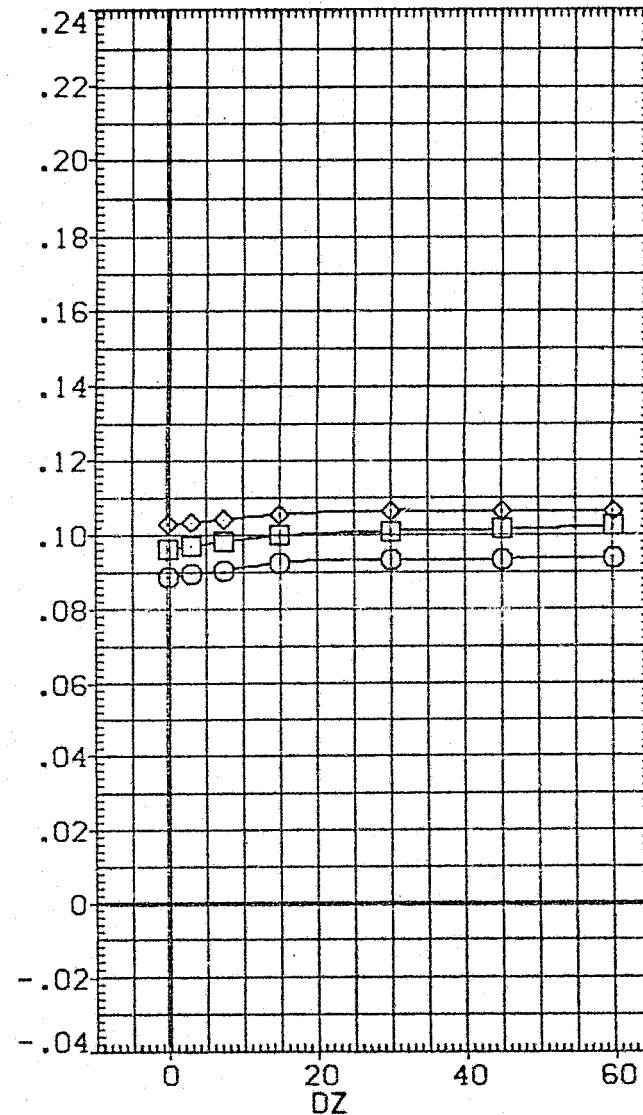
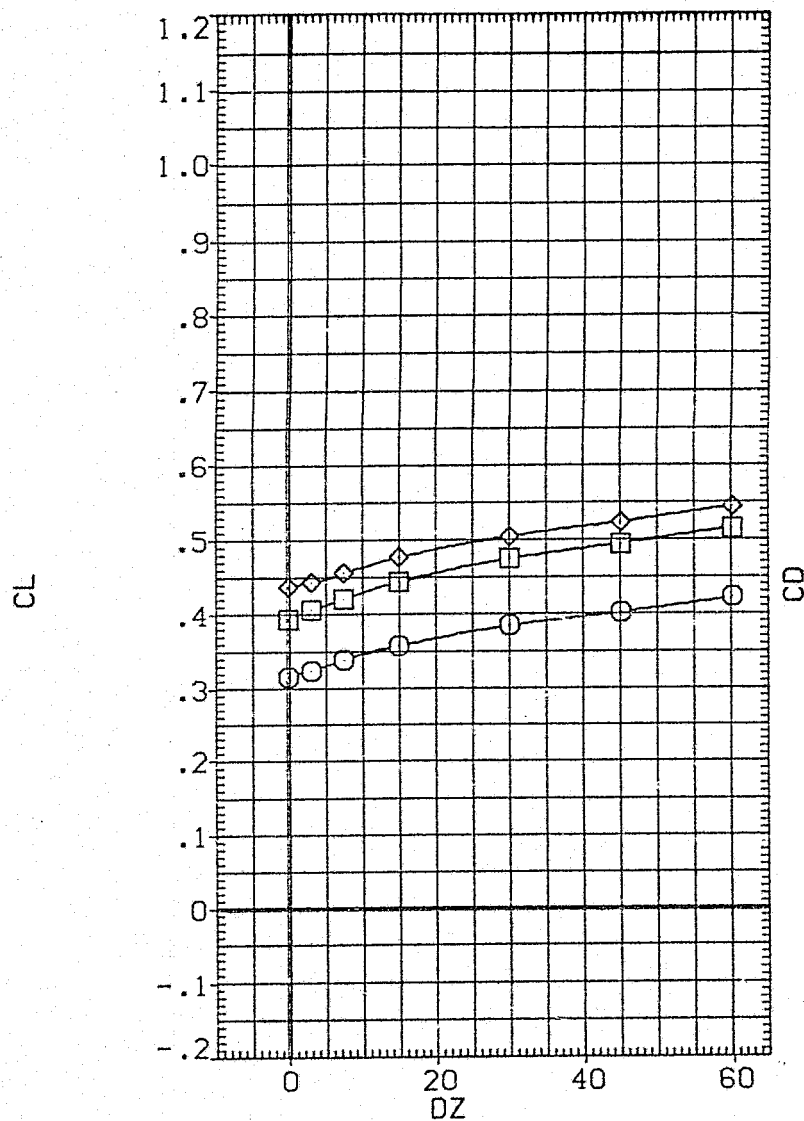


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(MGN142) CA20 747/1 01 S1
 (IGN052) CA20 747/1 01 S1
 (MGN141) CA20 747/1 01 S1

CARRIER DATA
 CARRIER DATA
 CARRIER DATA

ELV-IB ELV-DB ALPHAC DX
 -10.000 -7.000 4.000 .000
 .000 3.000 4.000 .000
 10.000 13.000 4.000 .000

REFERENCE INFORMATION
 SREF 5500.0000 SQ.FT.
 LREF 327.7800 IN.
 BREF 2348.0400 IN.
 XMRP 1339.9000 IN.XC
 YMRP .0000 IN.YC
 ZMRP 190.8000 IN.ZC
 SCALE .0300

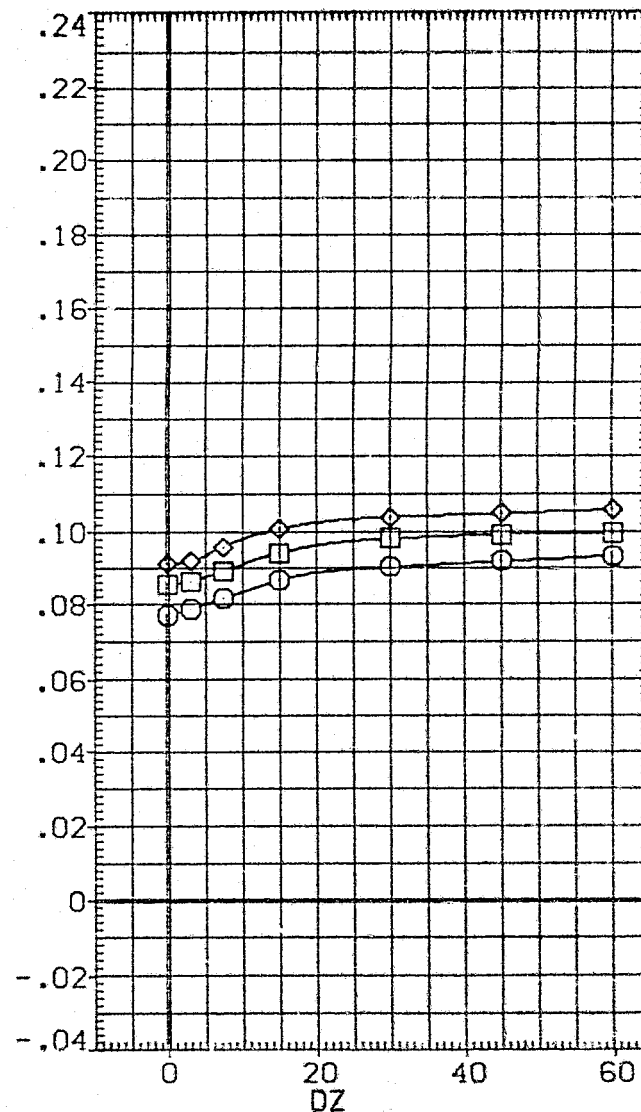
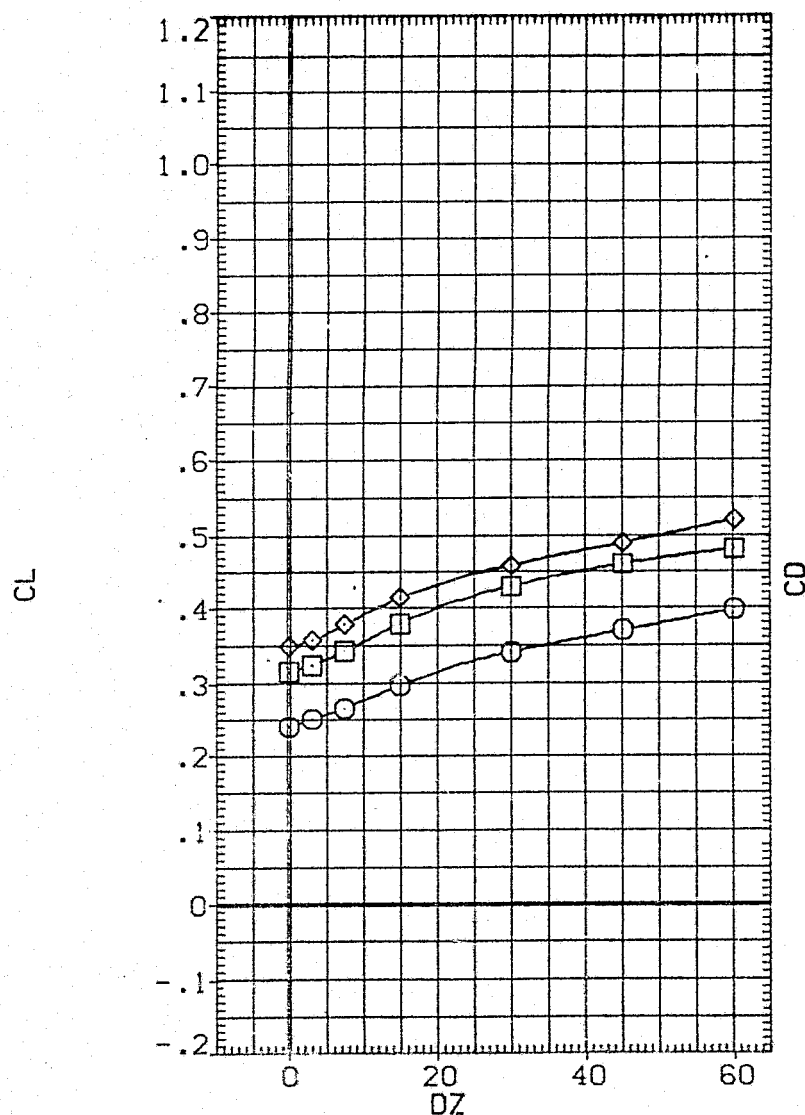


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (MGN142) ○ DATA NOT AVAILABLE
 (16N052) □ CA20 747/1 01 S1
 (MGN141) ◇ DATA NOT AVAILABLE

CARRIER DATA

ELV-1B	ELV-0B	ALPHA0	DX	REFERENCE INFORMATION		
-10.000	-7.000	4.000	.000	SREF	5500.0000	SQ.FT.
.000	3.000	4.000	.000	LREF	327.7800	IN.
10.000	13.000	4.000	.000	BREF	2348.0400	IN.
				XMRP	1339.9000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

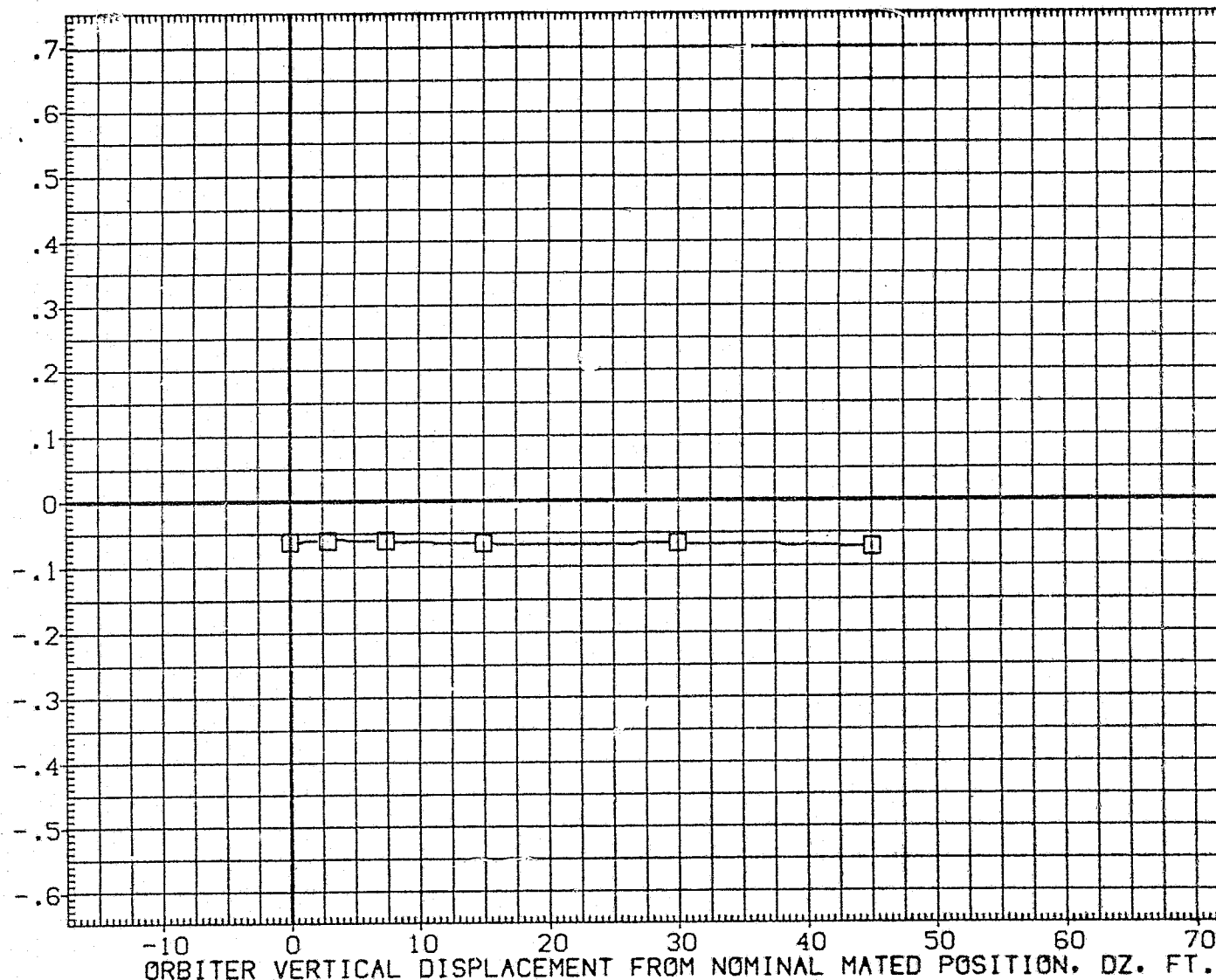


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A)ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(MGN142)	CA20 747/1 01 S1
(IGN052)	CA20 747/1 01 S1
(MGN141)	CA20 747/1 01 S1

	ELV-1B	ELV-0B	ALPHAC	DX	REFERENCE INFORMATION
CARRIER DATA	-10.000	-7.000	4.000	.000	SREF 5500.0000 SQ.FT.
CARRIER DATA	.000	3.000	4.000	.000	LREF 327.7800 IN.
CARRIER DATA	10.000	13.000	4.000	.000	BREF 2348.0400 IN.
					XMRP 1339.9000 IN.XC
					YMRP .0000 IN.YC
					ZMRP 190.8000 IN.ZC
					SCALE .0300

PITCHING MOMENT COEFFICIENT, CLM

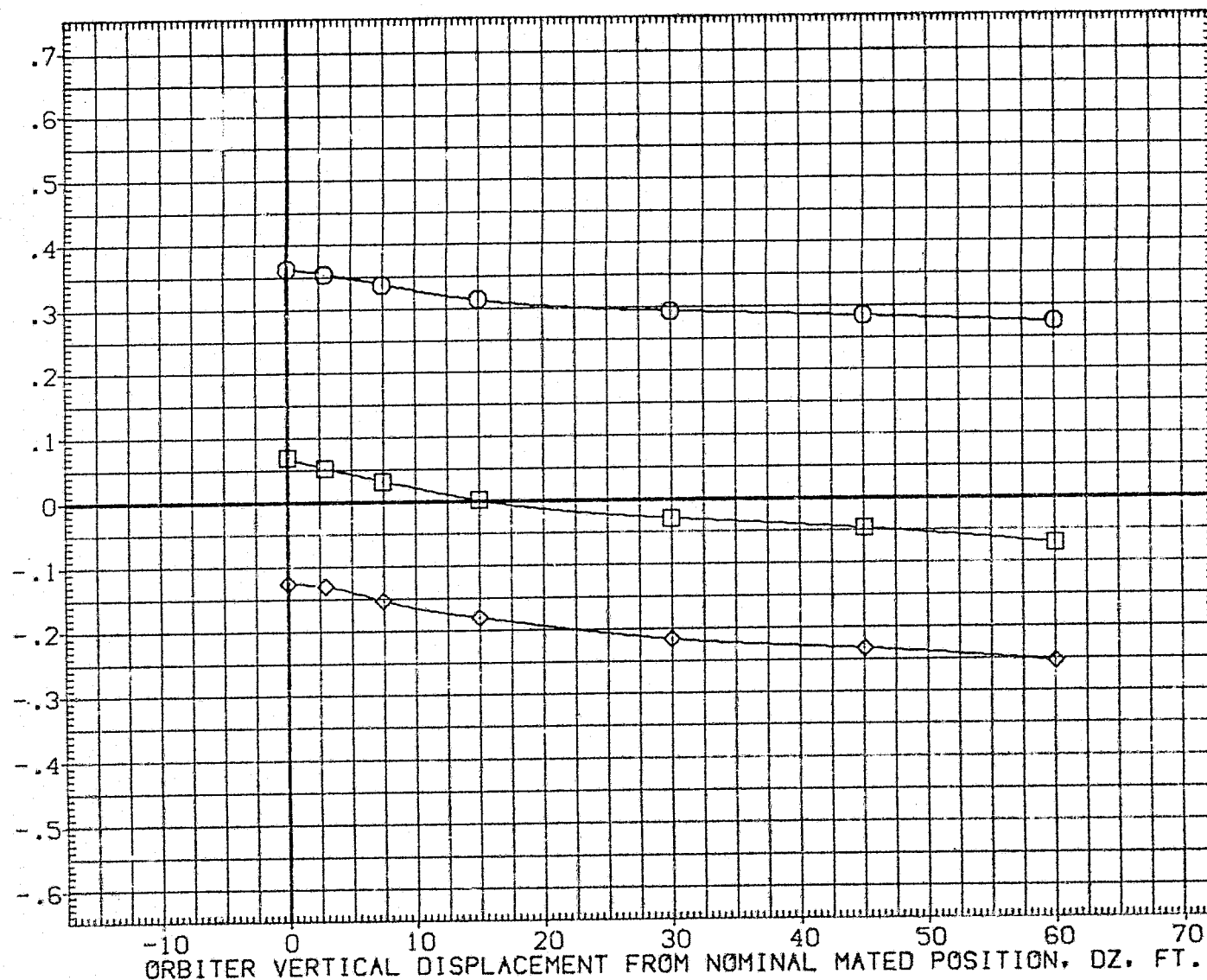


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (B)ALPHAC= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(MGN142)	CA20 747/1 01 S1
(IGN052)	CA20 747/1 01 S1
(MGN141)	CA20 747/1 01 S1

	ELV-1B	ELV-0B	ALPHAC	DX
CARRIER DATA	-10.000	-7.000	4.000	.000
CARRIER DATA	.000	3.000	4.000	.000
CARRIER DATA	10.000	13.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

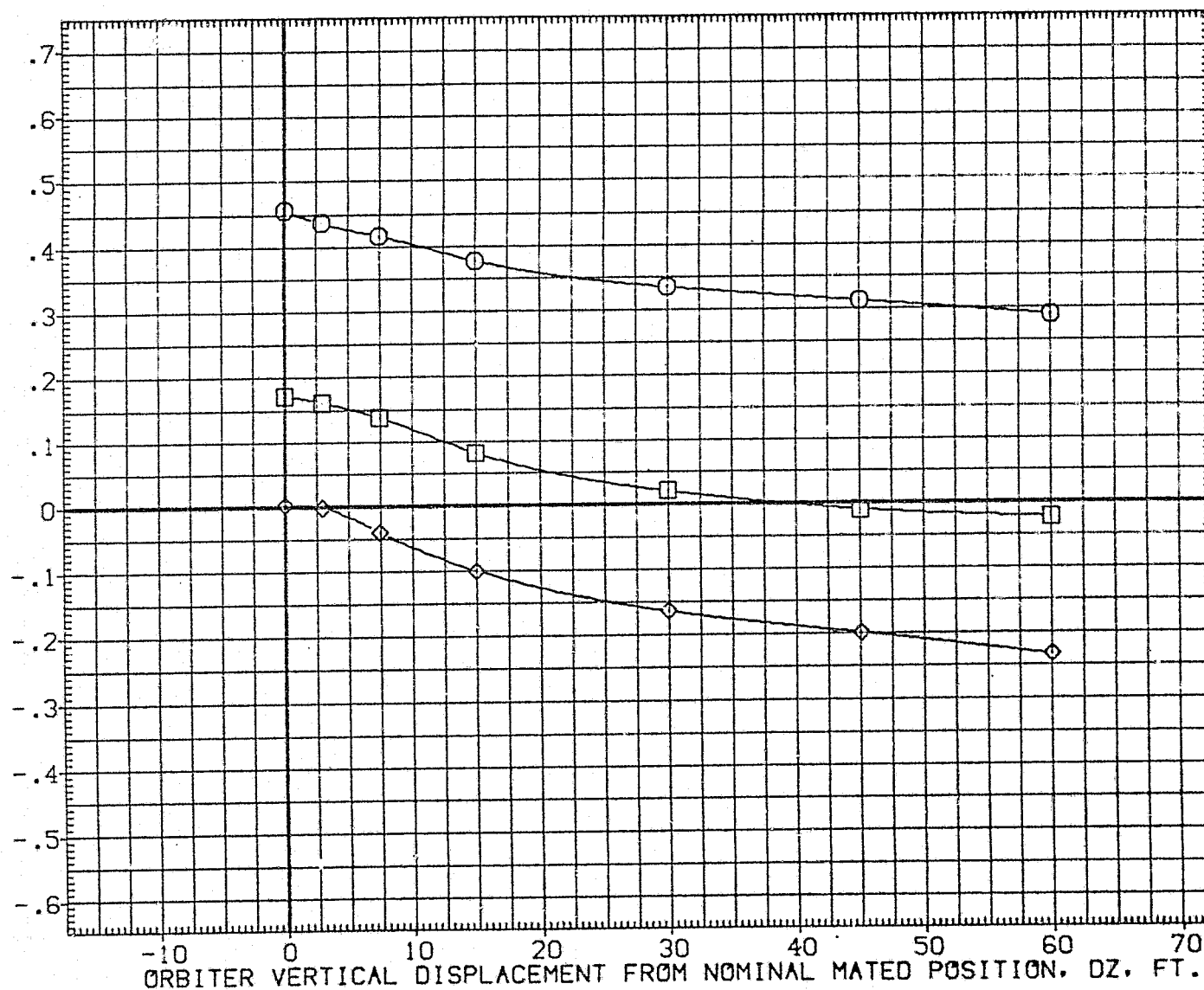


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(MGN142)	DATA NOT AVAILABLE
(16N052)	CA20 747/1 01 S1
(MGN141)	DATA NOT AVAILABLE

	ELV-1B	ELV-0B	ALPHA0	DX
CARRIER DATA	-10.000	-7.000	4.000	.000
	.000	3.000	4.000	.000
	10.000	13.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

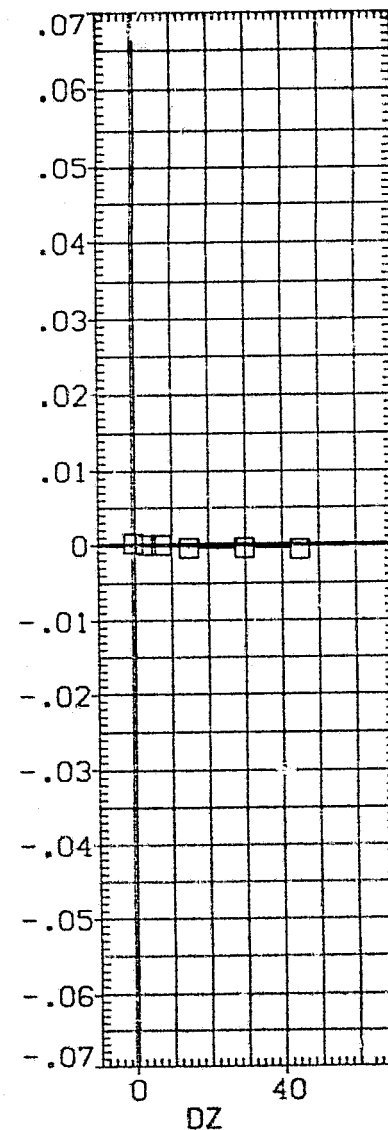
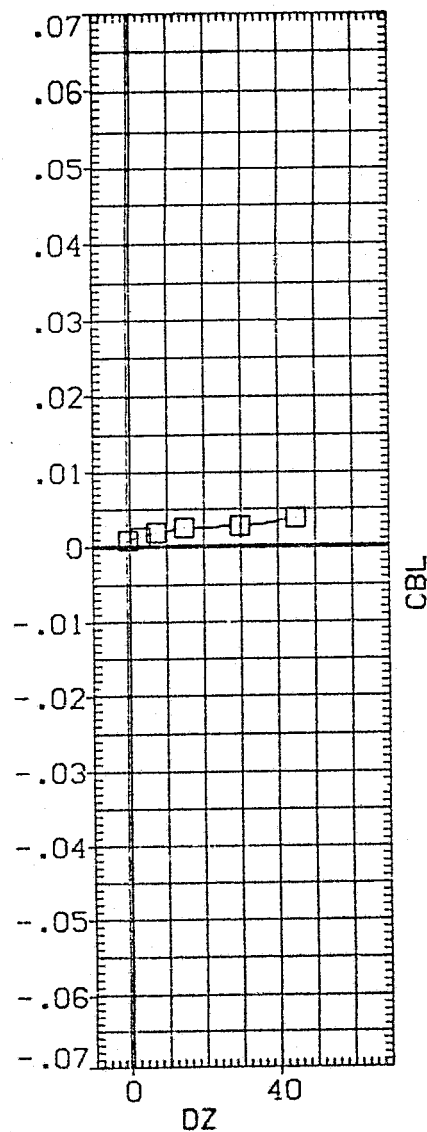
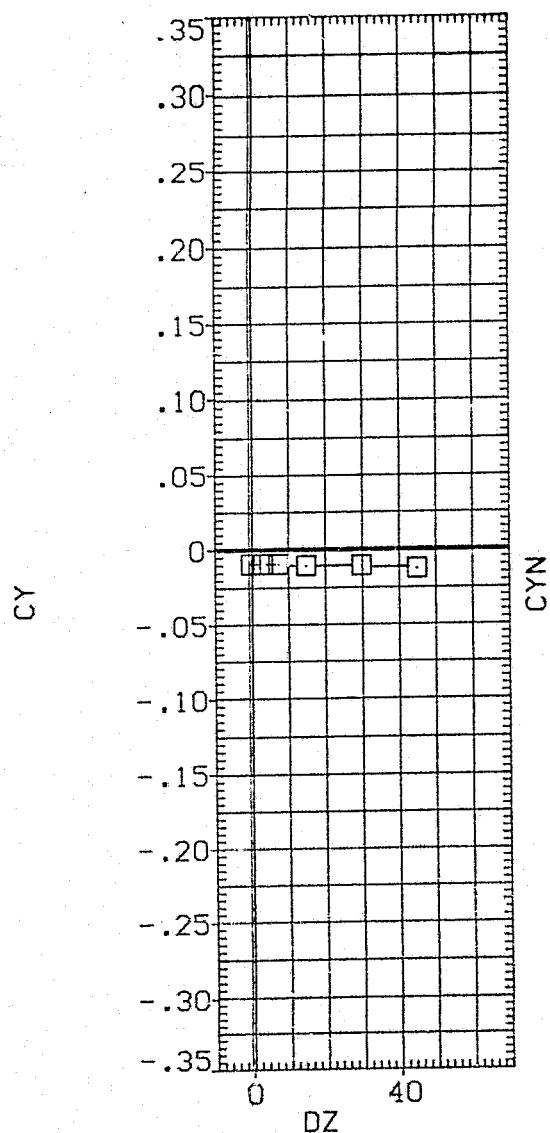


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(MGN142)	CA20 747/1 01 SI
(IGN052)	CA20 747/1 01 SI
(MGN141)	CA20 747/1 01 SI

	ELV-1B	ELV-02	ALPHAC	DX
CARRIER DATA	-10.000	-7.000	4.000	.000
CARRIER DATA	.000	3.000	4.000	.000
CARRIER DATA	10.000	13.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

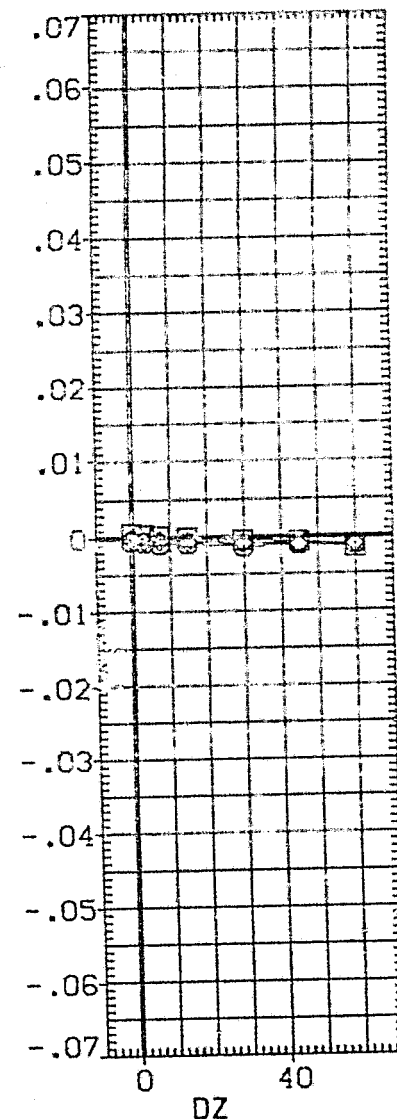
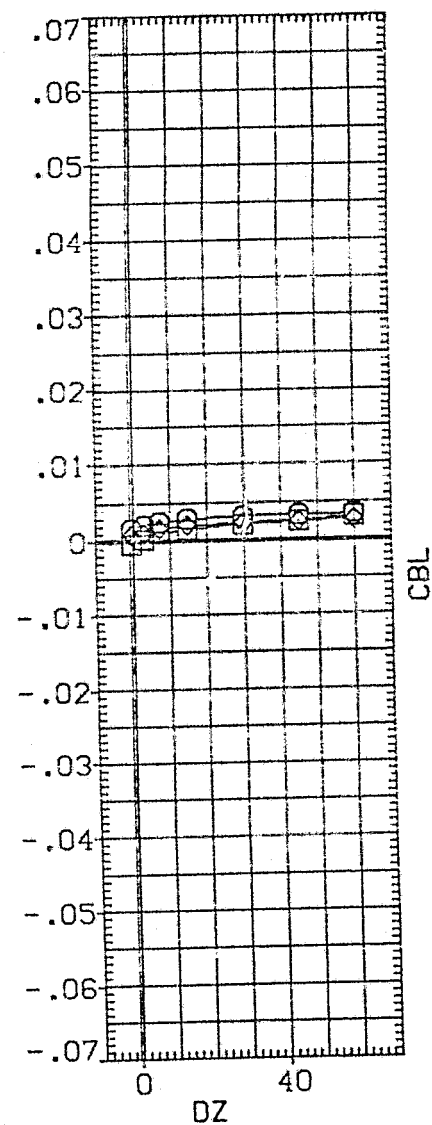
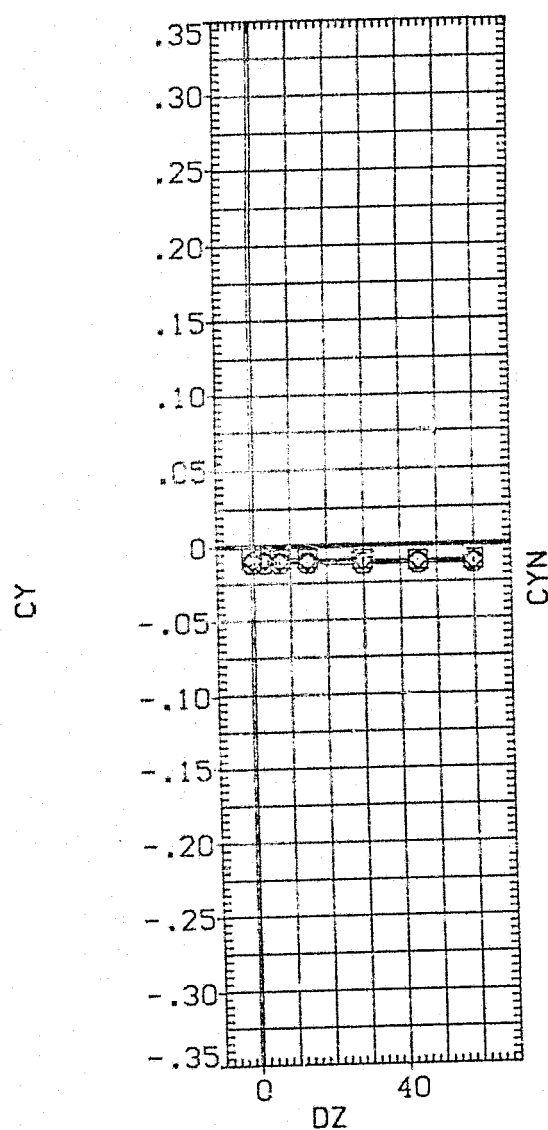


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(MGN142)	CA20 747/1 01 S1
(IGN052)	CA20 747/1 01 S1
(MGN141)	CA20 747/1 01 S1

	ELV-18	ELV-08	ALPHAC	DX
CARRIER DATA	-10.000	-7.000	4.000	.000
CARRIER DATA	.000	3.000	4.000	.000
CARRIER DATA	10.000	13.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.0000
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

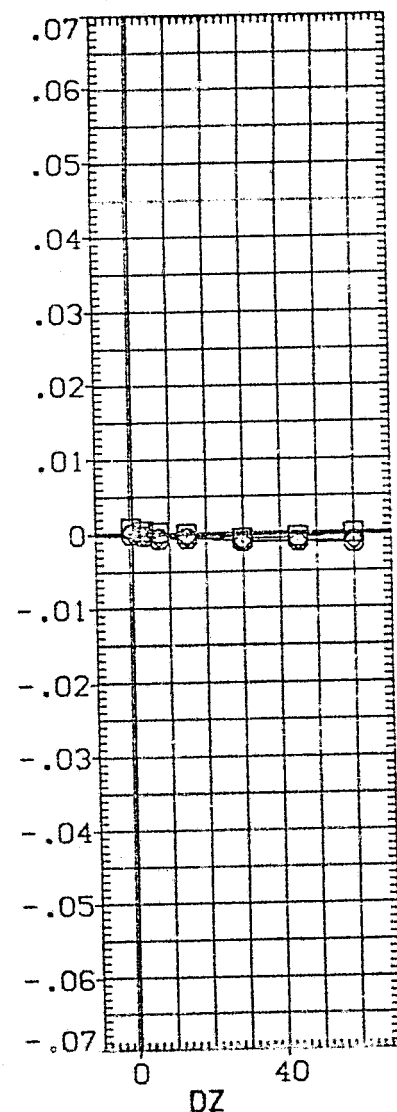
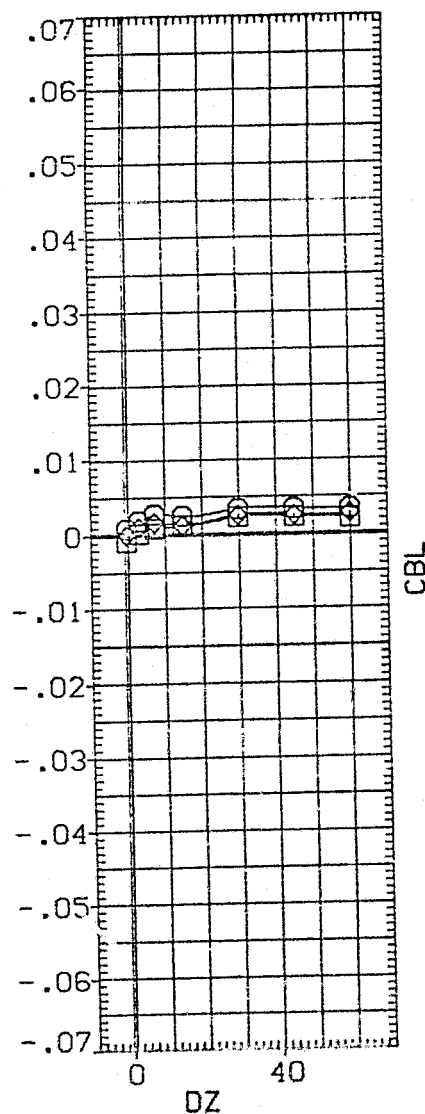
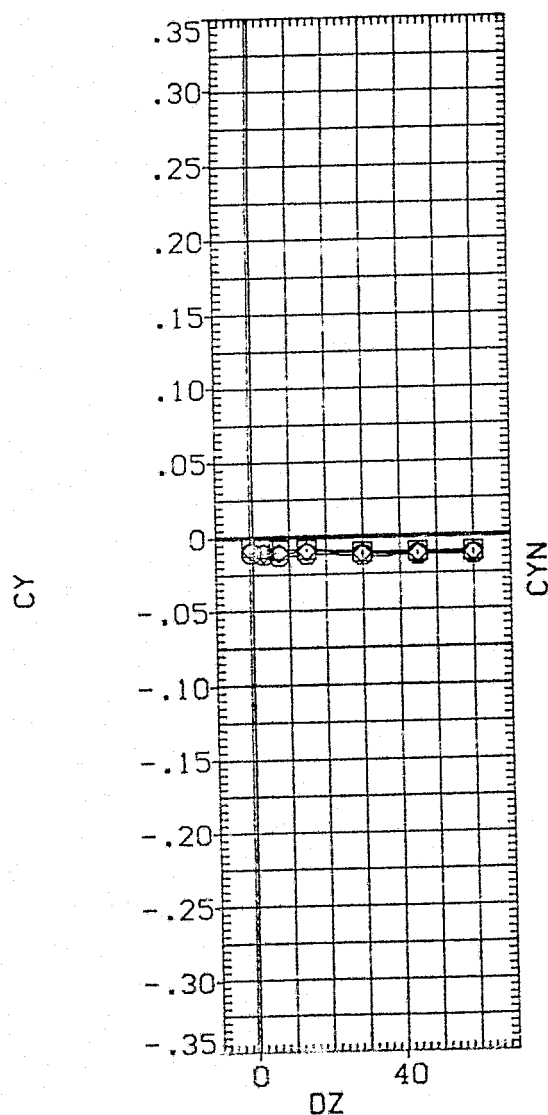


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (MGN142) □ DATA NOT AVAILABLE
 (16N052) □ CA20 747/1 01 S1
 (MGN141) ◇ DATA NOT AVAILABLE

CARRIER DATA ELV-1B ELV-08 ALPHAC DX
 -10.000 -7.000 4.000 .000
 .000 3.000 4.000 .000
 15.000 13.000 4.000 .000

REFERENCE INFORMATION
 SREF 5500.0000 50.FT.
 LREF 327.7800 IN.
 BREF 2348.0400 IN.
 XMRP 1339.9000 IN.XC
 YMRP .0000 IN.YC
 ZMRP 190.8000 IN.ZC
 SCALE .0300

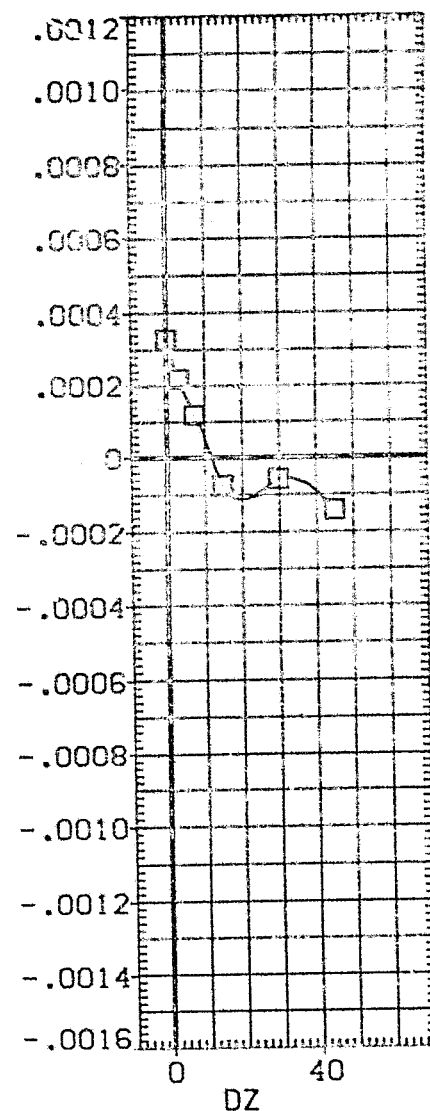
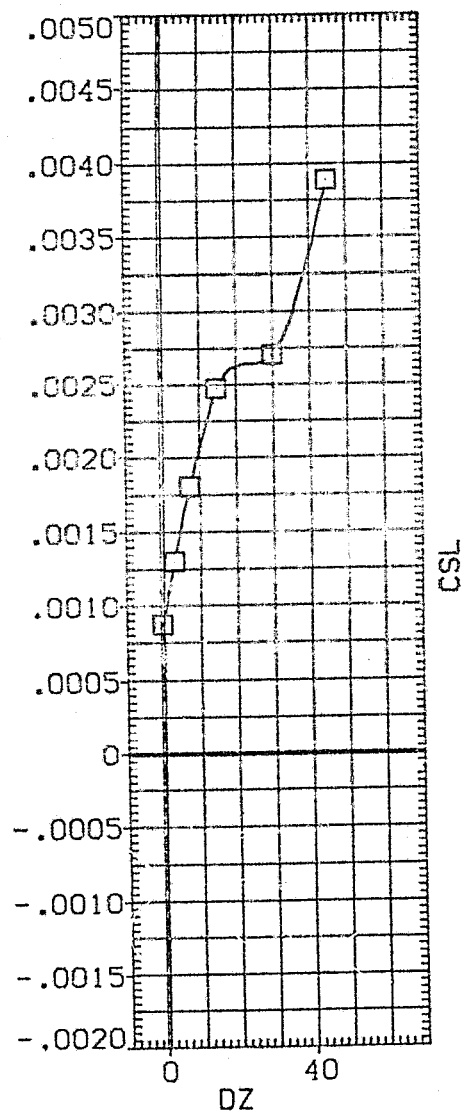
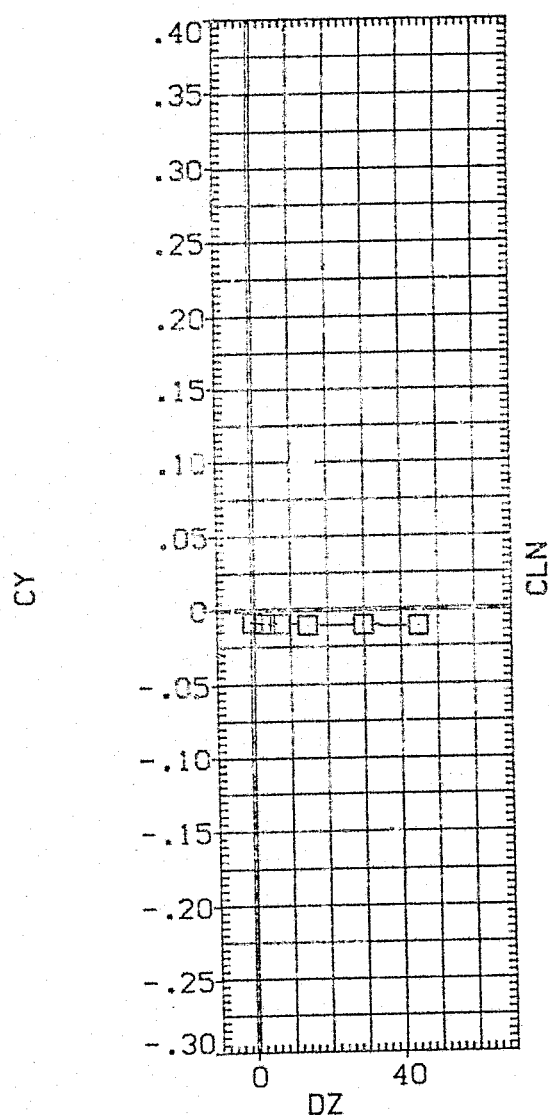


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

C/D

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(MGN142)	CA20 747/1 11 S1
(1GN052)	CA20 747/1 11 S1
(MGN141)	CA20 747/1 01 S1

	ELV-18	ELV-08	ALPHAC
CARRIER DATA	-10.000	-7.000	4.000
CARRIER DATA	.000	3.000	4.000
CARRIER DATA	10.000	13.000	4.000

DX	REFERENCE INFORMATION
.000	SREF 5500.0000 SQ.FT.
.000	LREF 327.7800 IN.
.000	BREF 2348.0400 IN.
	XMRP 1339.9000 IN.XC
	YMRP .0000 IN.YC
	ZMRP 190.8000 IN.ZC
	SCALE .0300

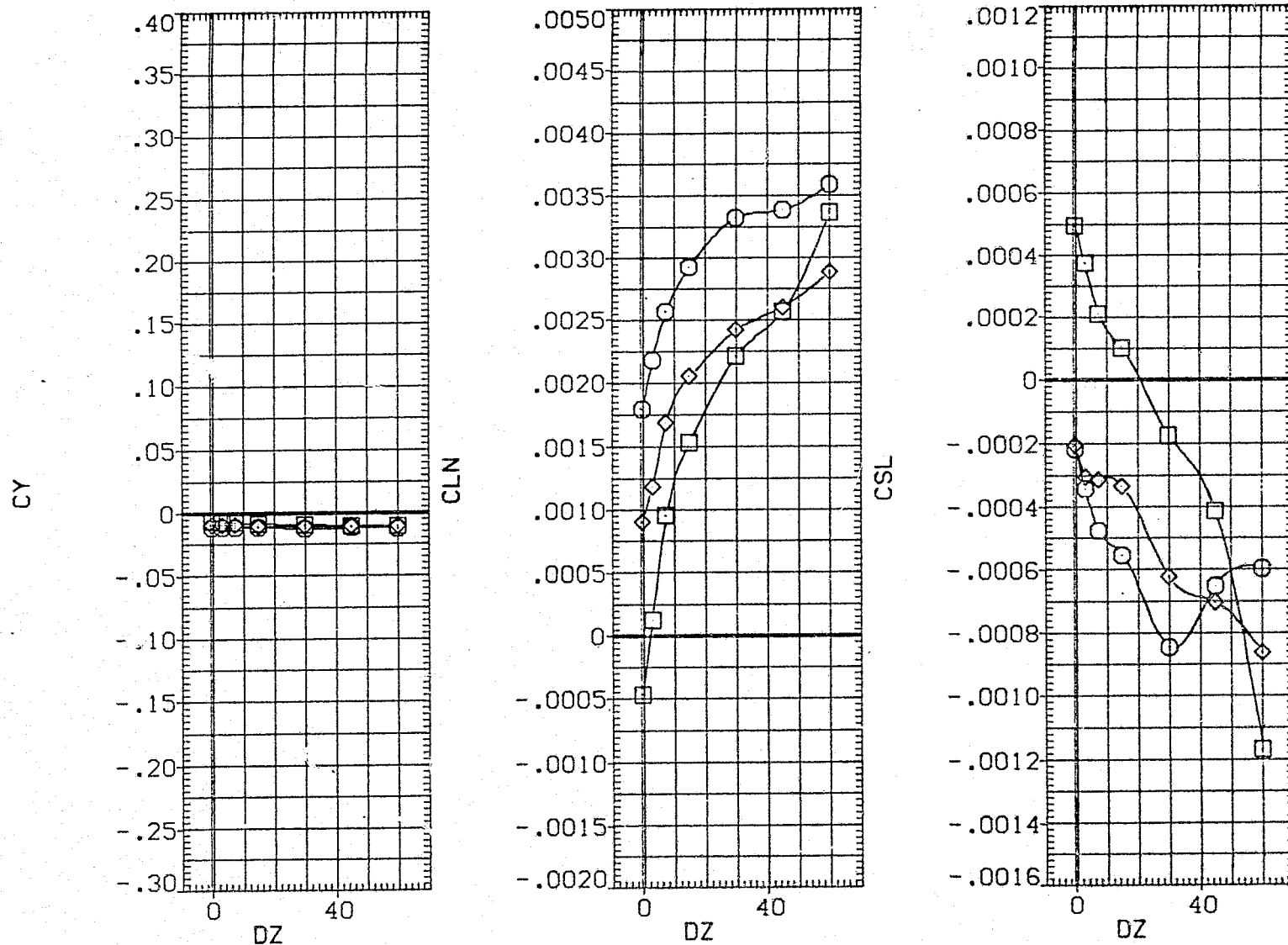


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(MGN142)	CA20 747/1 01 S1
(16N052)	CA20 747/1 01 S1
(MGN141)	CA20 747/1 01 S1

	ELV-18	ELV-08	ALPHA0
CARRIER DATA	-10.300	-7.000	4.000
CARRIER DATA	.300	3.000	4.000
CARRIER DATA	10.000	13.000	4.000

DX	REFERENCE INFORMATION	SD.FT.
.000	SREF	5500.0000
.000	LREF	327.7800
.000	BREF	2348.0400
	XM.P	1339.9000
	YMRP	.0000
	ZMRP	190.8000
	SCALE	.0300

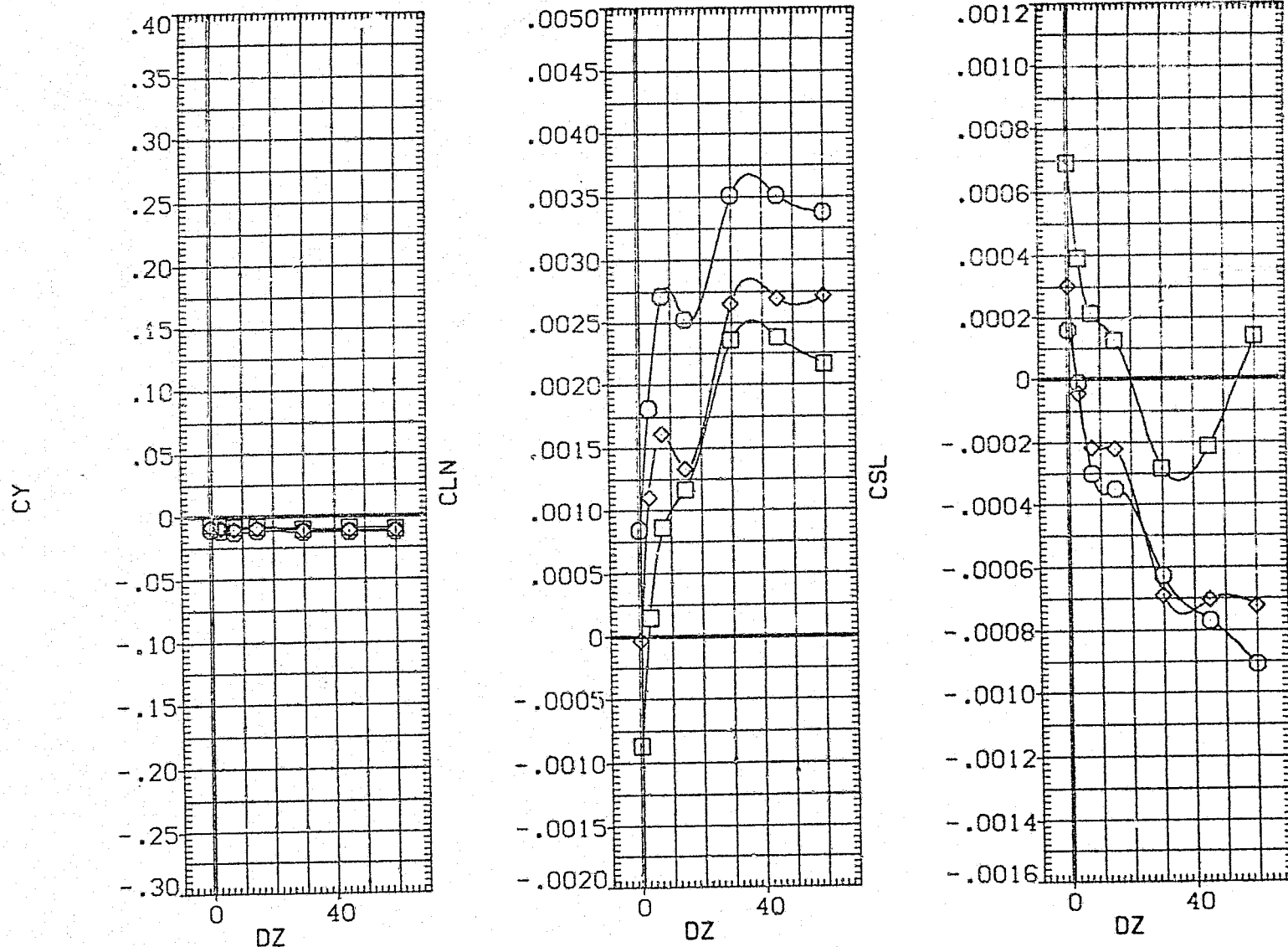


FIG 32 ELEVATOR EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	□	DATA NOT AVAILABLE
(26N052)	◇	CA20 747/1 01 S1
(NGN141)	◇	DATA NOT AVAILABLE

ORBITER DATA

ELV-IB	ELV-OB	ALPHAC	DX
-10.000	-7.000	4.000	.000
.000	3.000	4.000	.000
10.000	13.000	4.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.XG
YMRP	.0000	IN.YG
ZMRP	375.0000	IN.ZG
SCALE	.0300	

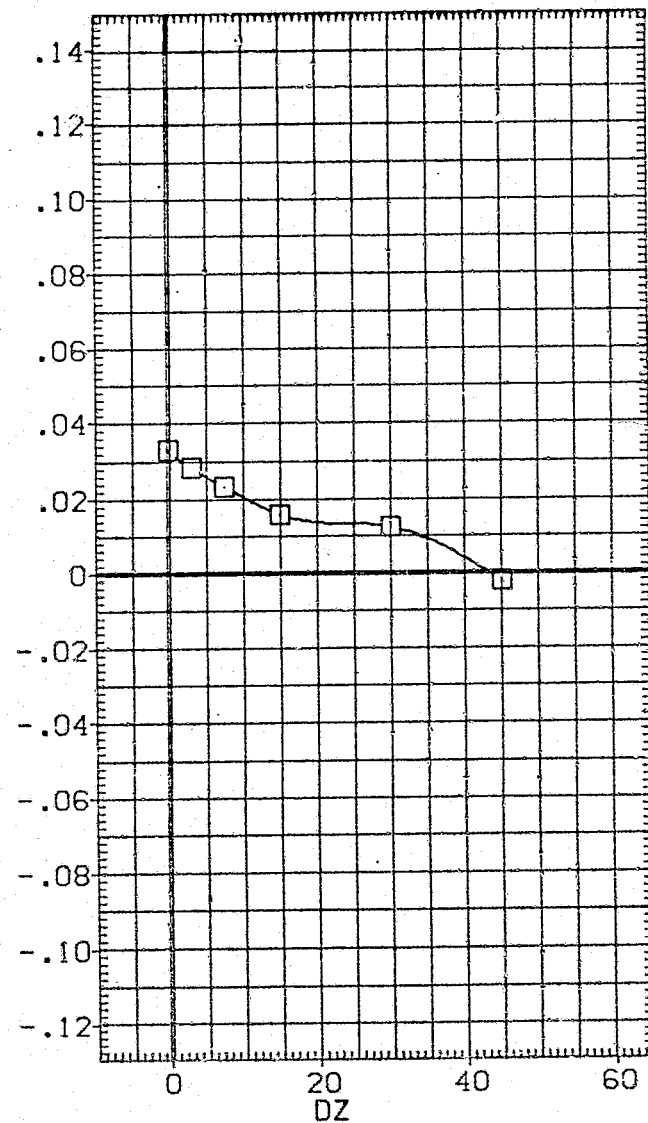
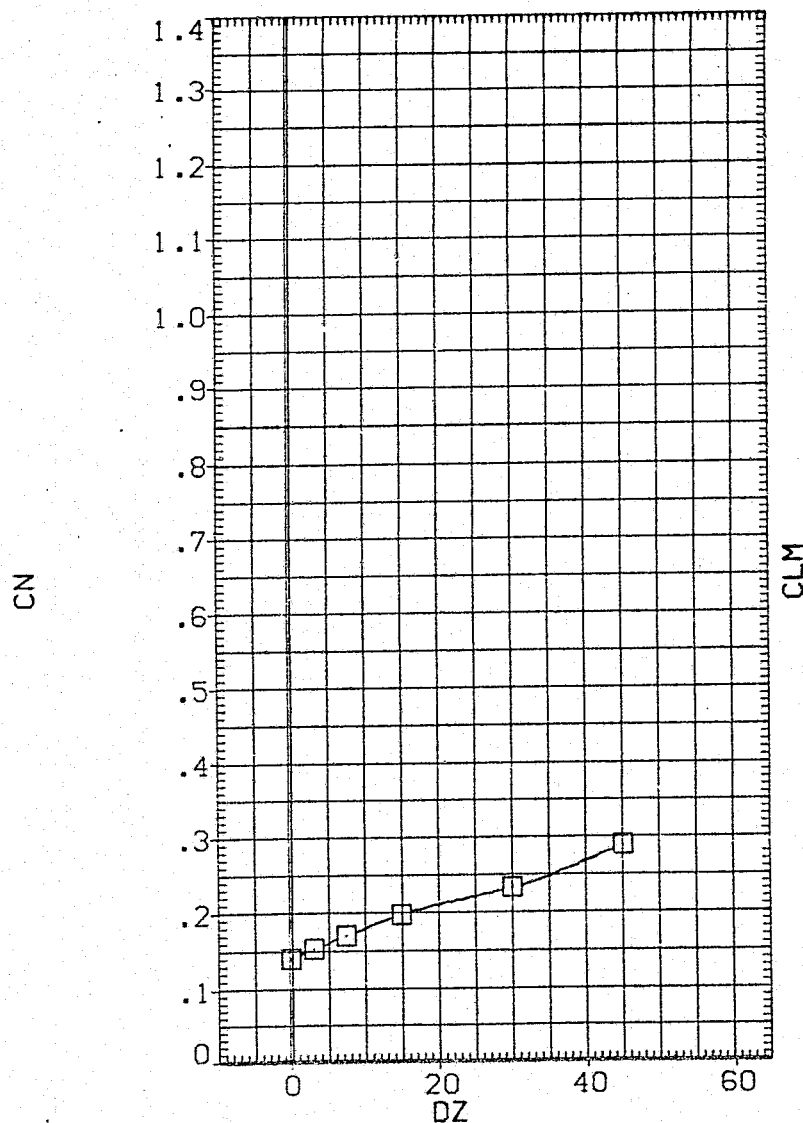


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA = 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	CA20 747/1 01 S1
(2GN052)	CA20 747/1 01 S1
(NGN141)	CA20 747/1 01 S1

	ELV-1B	ELV-0B	ALPHAC	DX	REFERENCE INFORMATION		
ORBITER DATA	-10.000	-7.000	4.000	.000	SREF	2690.0000	50.FT.
ORBITER DATA	.000	3.000	4.000	.000	LREF	474.8100	IN.
ORBITER DATA	10.000	13.000	4.000	.000	BREF	936.6800	IN.
					XMRP	1109.0000	IN.X0
					YMRP	.0000	IN.Y0
					ZMRP	375.0000	IN.Z0
					SCALE	.0300	

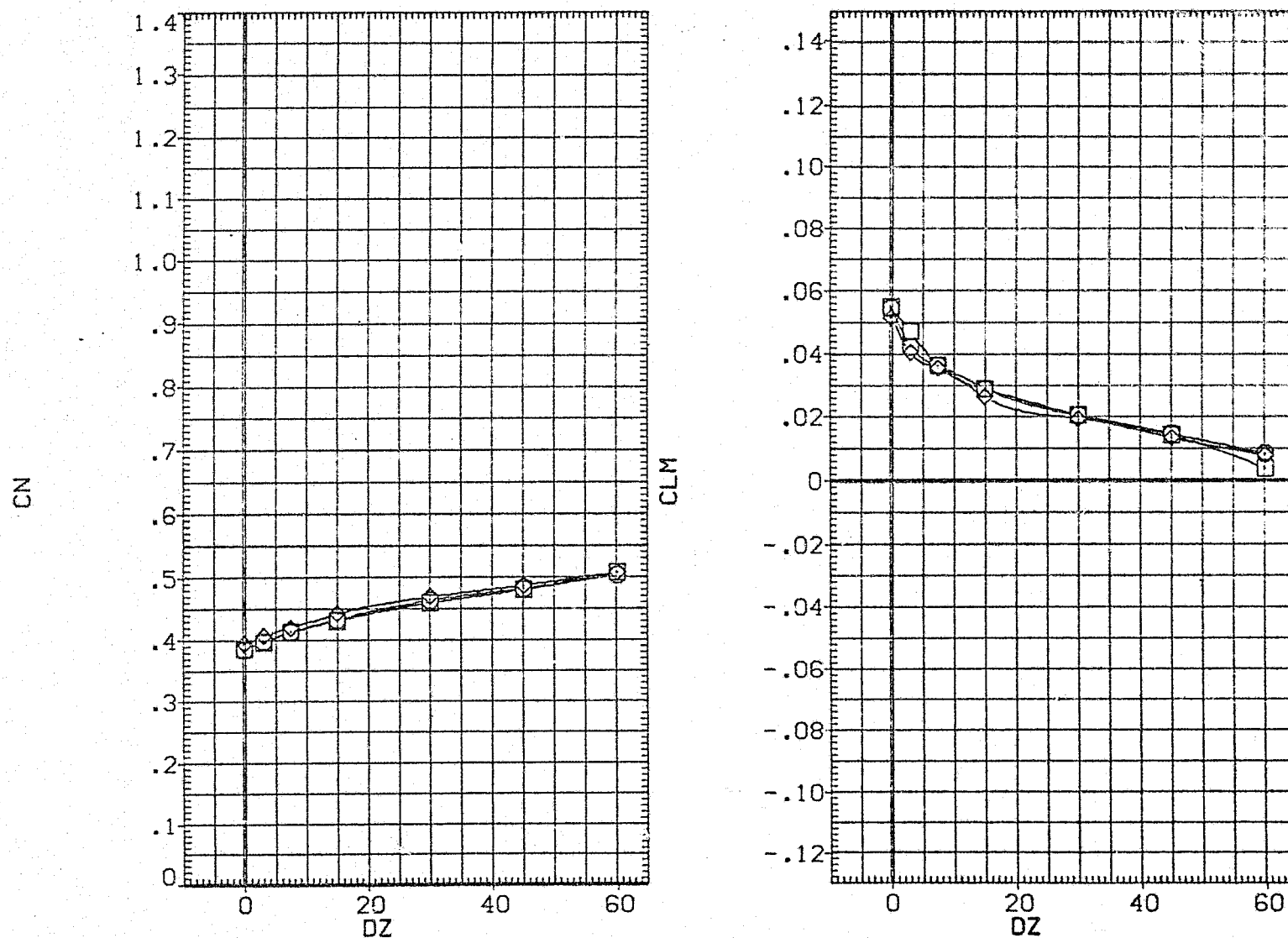


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	CA20 747/1 01 S1
(2GN052)	CA20 747/1 01 S1
(NGN141)	CA20 747/1 01 S1

ORBITER DATA	ELV-1B	ELV-0B	ALPHAC	DX	REFERENCE INFORMATION
ORBITER DATA	-10.000	-7.000	4.000	.000	SREF 2690.0000 SQ.FT.
ORBITER DATA	.000	3.000	4.000	.000	LREF 474.8100 IN.
ORBITER DATA	10.000	13.000	4.000	.000	BREF 936.6800 IN.
					XMRF 1109.0000 IN.X0
					YMRF .0000 IN.Y0
					ZMRF 375.0000 IN.Z0
					SCALE .0300

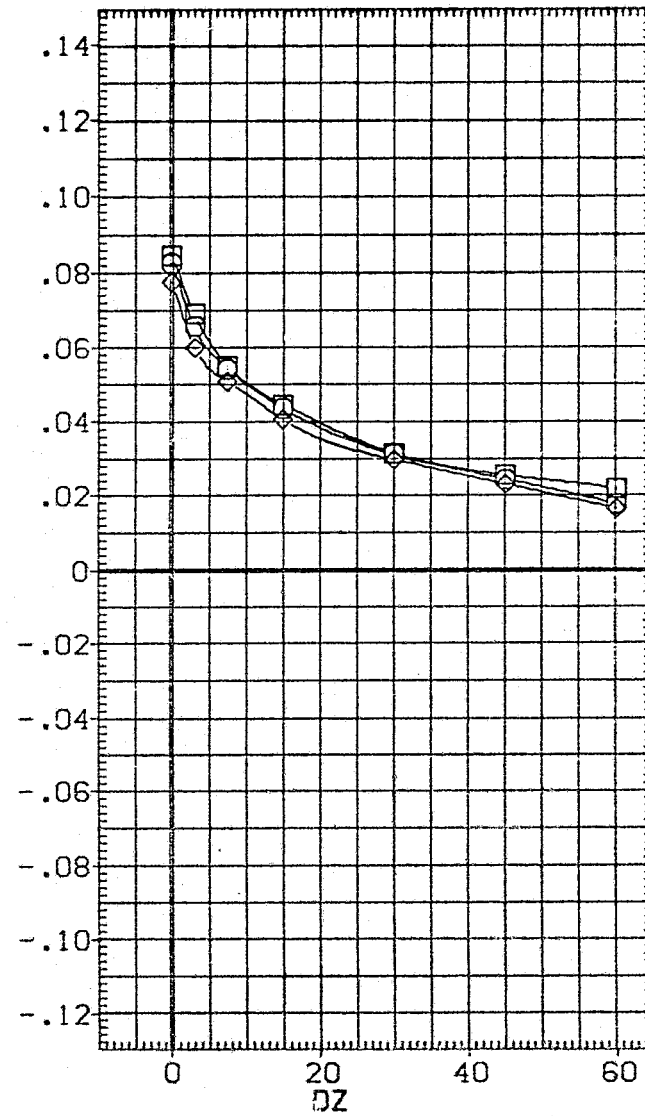
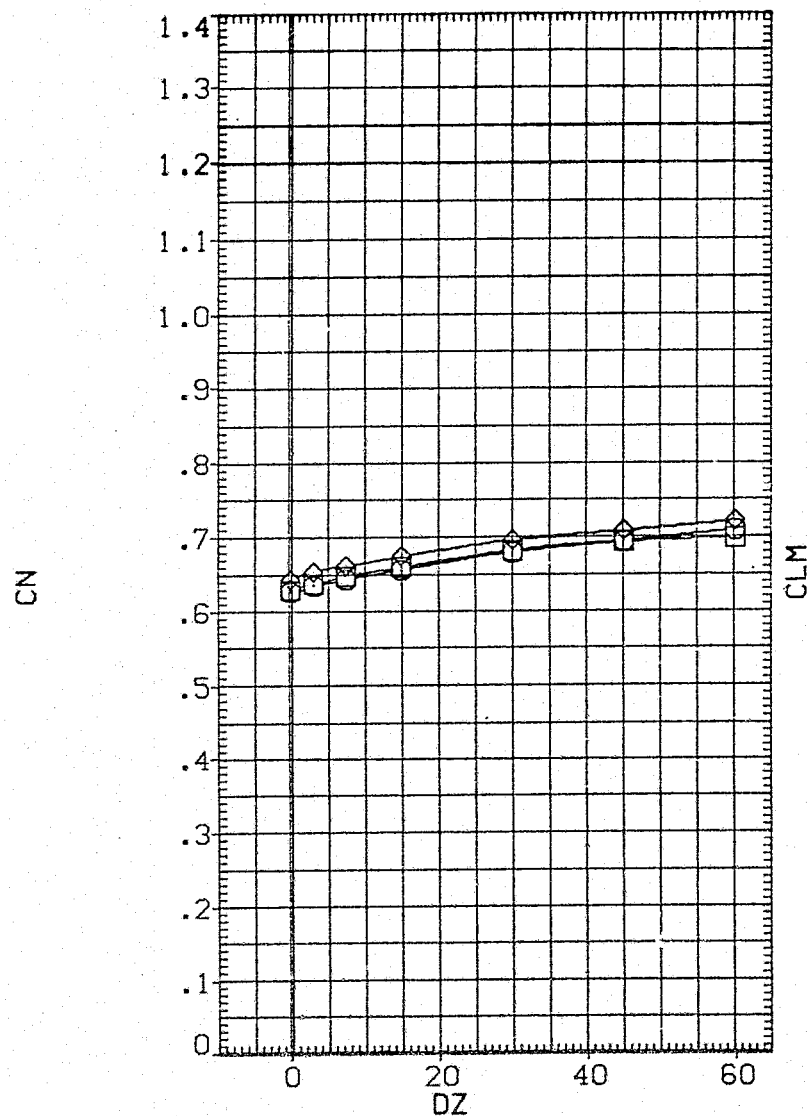


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	DATA NOT AVAILABLE
(26N052)	CA20 747/1 01 S1
(NGN141)	DATA NOT AVAILABLE

ORBITER DATA	ELV-1B	ELV-0B	ALPHAC	DX	REFERENCE INFORMATION
	-10.000	-7.000	4.000	.000	SREF 2690.0000 SO.FT.
	.000	3.000	4.000	.000	LREF 474.8100 IN.
	10.000	13.000	4.000	.000	BREF 936.6800 IN.
					XMRP 1109.0000 IN.X0
					YMRP .0000 IN.Y0
					ZMRP 375.0000 IN.Z0
					SCALE .0300

AXIAL FORCE COEFFICIENT, CA

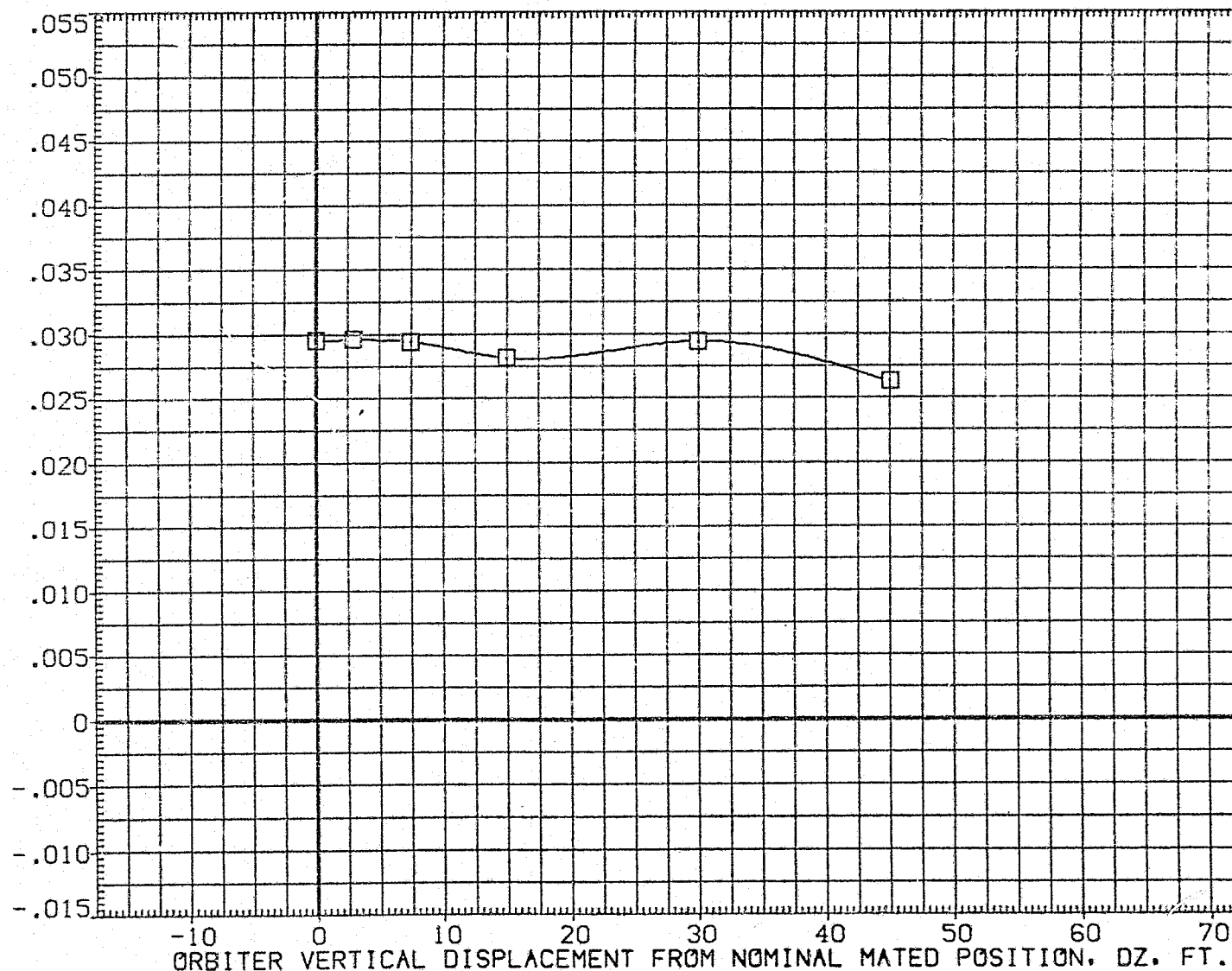


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	CA20 747/1 01 S1
(2GN052)	CA20 747/1 01 S1
(NGN141)	CA20 747/1 01 S1

	ELV-18	ELV-08	ALPHAC	DX
ORBITER DATA	-10.000	-7.000	4.000	.000
ORBITER DATA	.000	3.000	4.000	.000
ORBITER DATA	10.000	13.000	4.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	SC.FT.
LREF	474.8100	IN.
BREF	936.8900	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

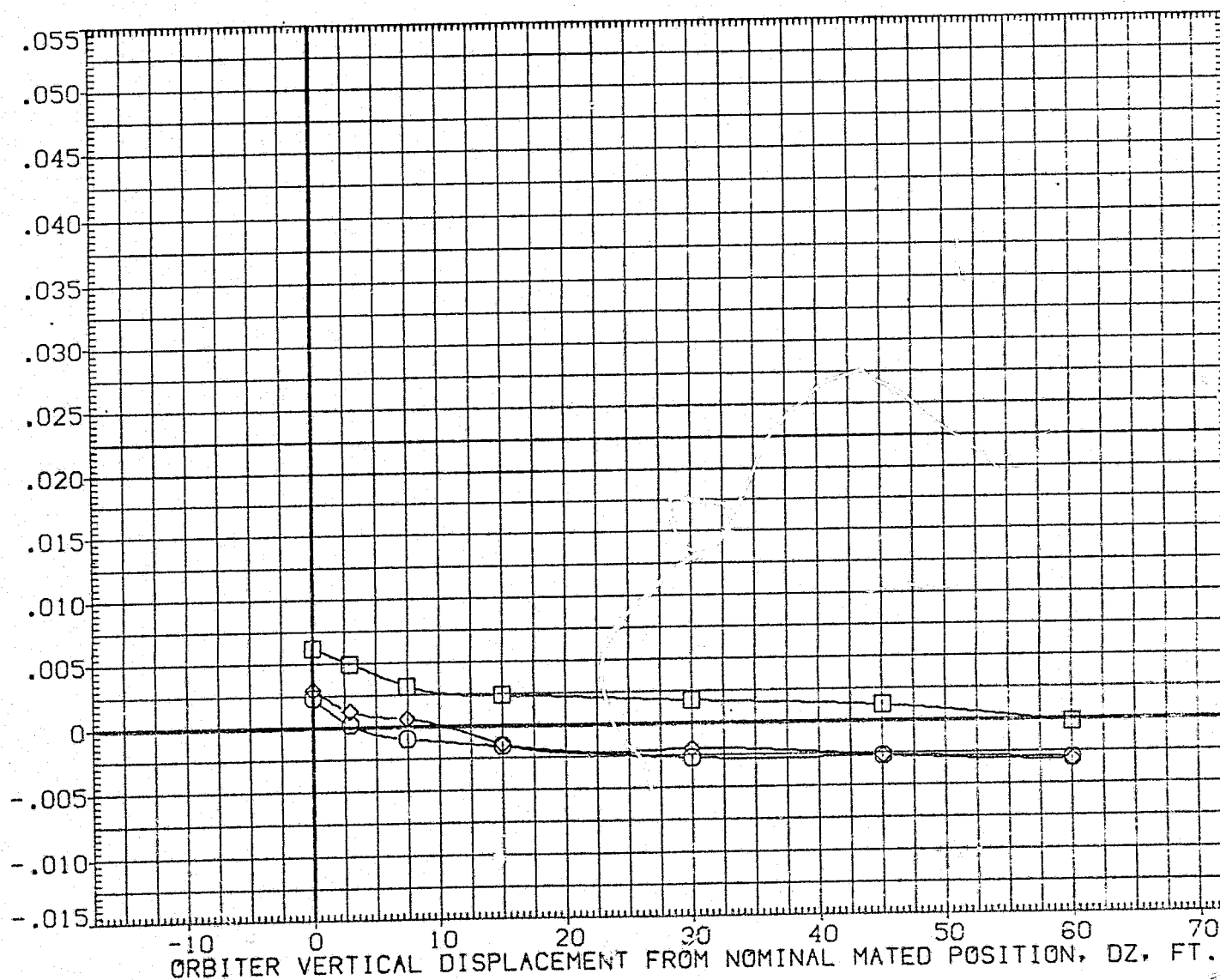


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0 = 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	CA20 747/1 01 S1
(2GND52)	CA20 747/1 01 S1
(NGN141)	CA20 747/1 01 S1

	ELV-1B	ELV-0B	ALPHAC	QX
ORBITER DATA	-10.000	-7.000	4.000	.000
ORBITER DATA	.000	3.000	4.000	.000
ORBITER DATA	10.000	13.000	4.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

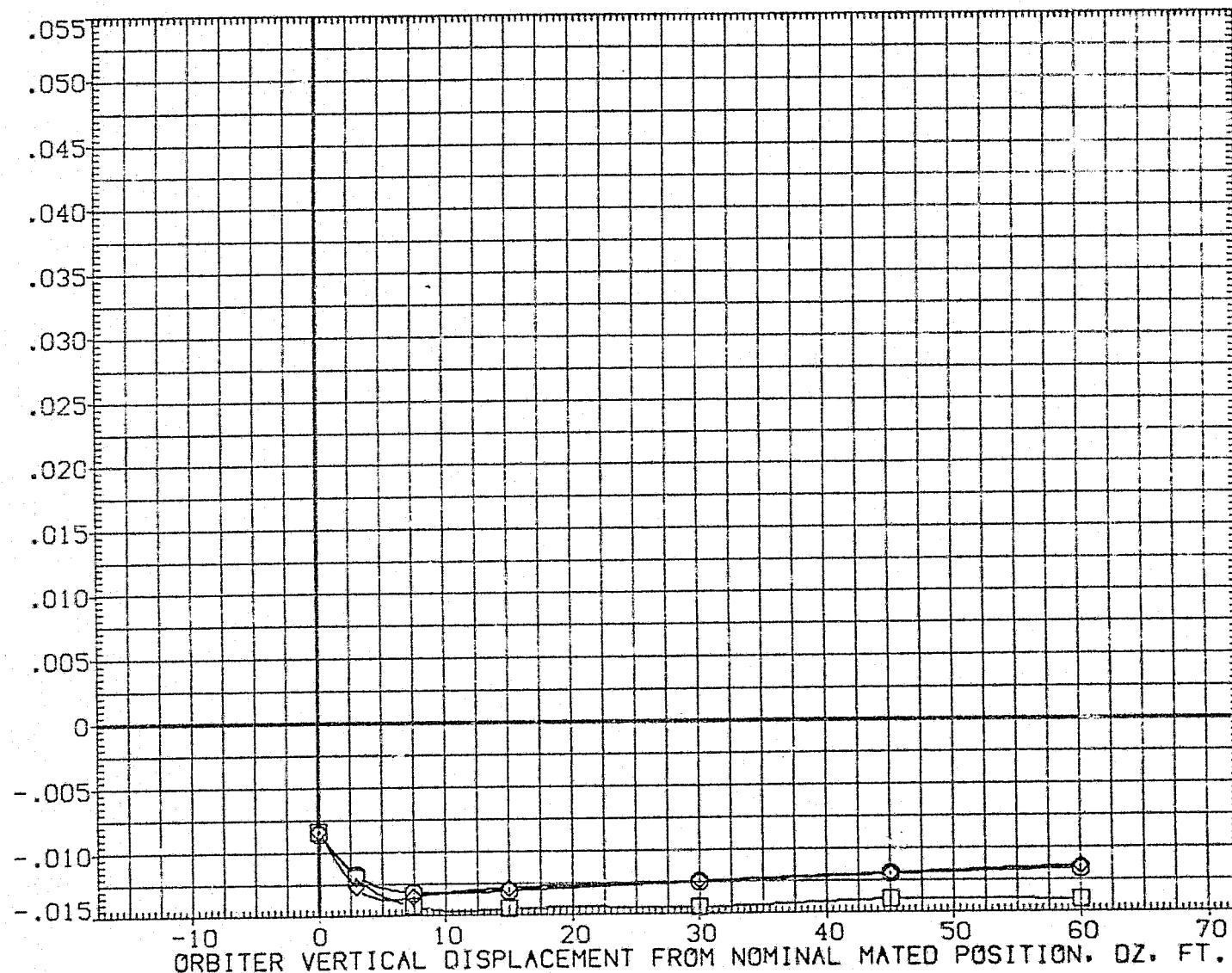


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	DATA NOT AVAILABLE
(2GN052)	CA20 747/1 01 S1
(NGN141)	DATA NOT AVAILABLE

ORBITER DATA

ELV-18	ELV-08	ALPHA0	DX	REFERENCE INFORMATION		
-10.000	-7.000	4.000	.000	SREF	2690.0000	50.FT.
.000	3.000	4.000	.000	LREF	474.8100	IN.
10.000	13.000	4.000	.000	BREF	936.6800	IN.
				XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

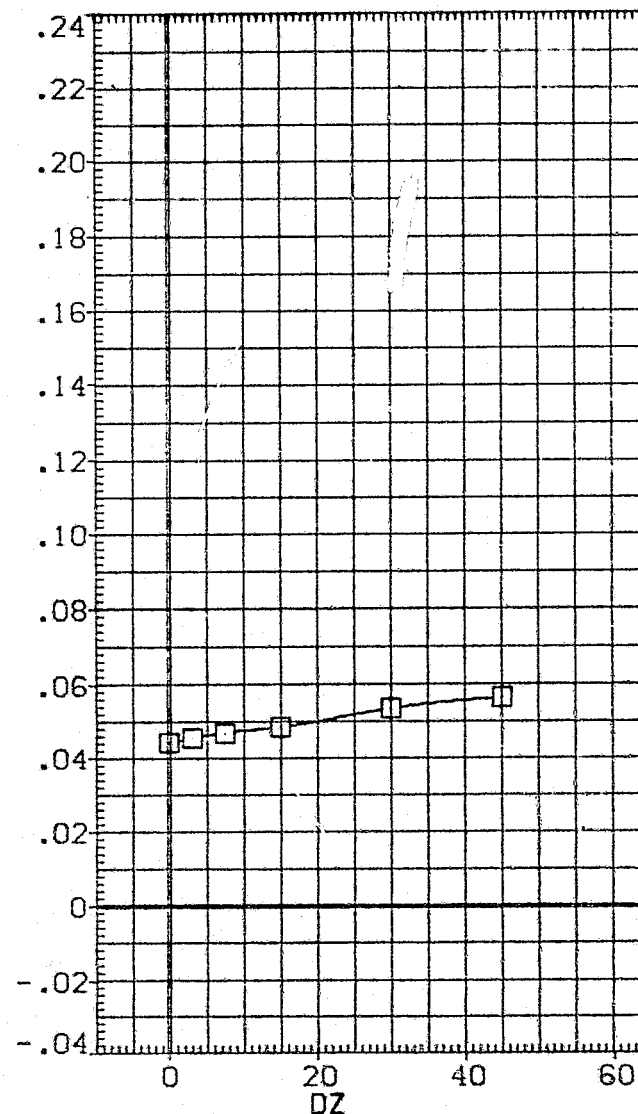
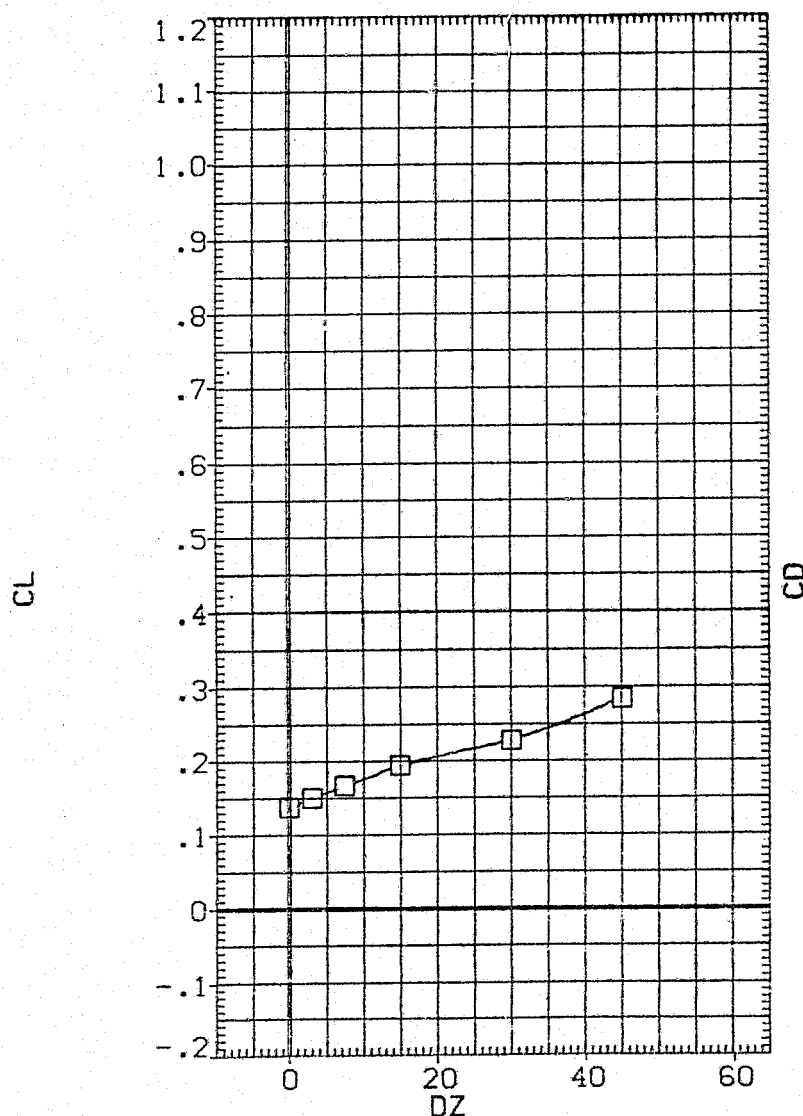


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0 = 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	CA2D 747/1 01 S1
(2GN052)	CA2C 747/1 01 S1
(NGN141)	CA2D 747/1 01 S1

	ELV-1B	ELV-0B	ALPHAC	DX	REFERENCE INFORMATION		
ORBITER DATA	-10.000	-7.000	4.000	.000	SREF	2690.0000	SC.FT.
ORBITER DATA	.000	3.000	4.000	.000	LREF	474.8100	IN.
ORBITER DATA	10.000	13.000	4.000	.000	BREF	936.6800	IN.
					XMRP	1109.0000	IN.XC
					YMRP	.0000	IN.YC
					ZMRP	375.0000	IN.ZC
					SCALE	.0300	

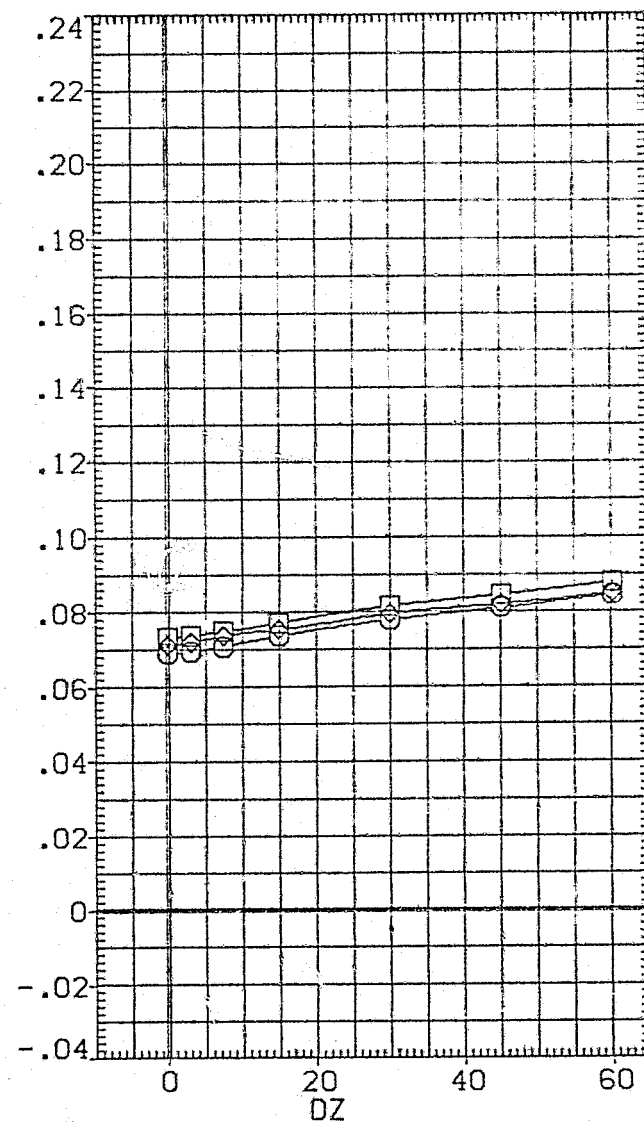
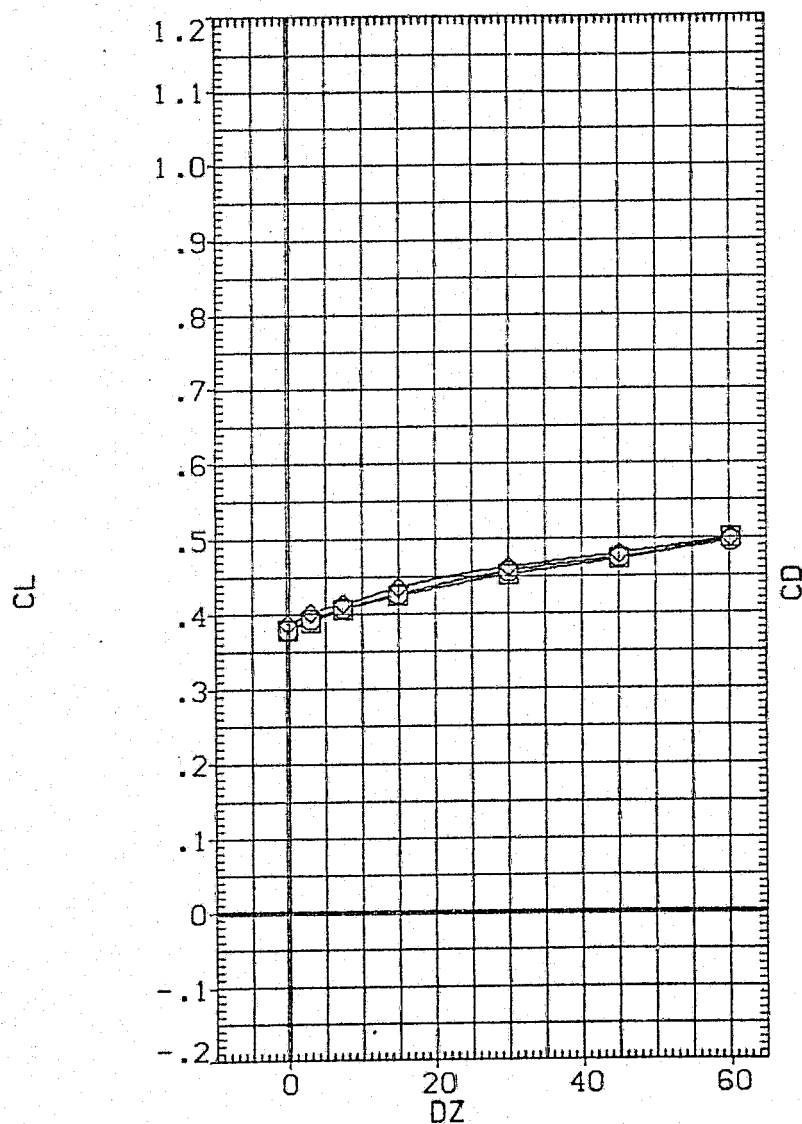


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	CA20 747/1 01 S1
(2GN052)	CA20 747/1 01 S1
(NGN141)	CA20 747/1 01 S1

	ELV-1B	ELV-0B	ALPHA0	DX
ORBITER DATA	-10.000	-7.000	4.000	.000
ORBITER DATA	.000	3.000	4.000	.000
ORBITER DATA	10.000	13.000	4.000	.000

REFERENCE INFORMATION			
SREF	2690.0000	SC.FT.	
LREF	474.8100	IN.	
BREF	936.6900	IN.	
XM RP	1109.0000	IN.XC	
YM RP	.0000	IN.YO	
ZM RP	375.0000	IN.ZO	
SCALE	.0300		

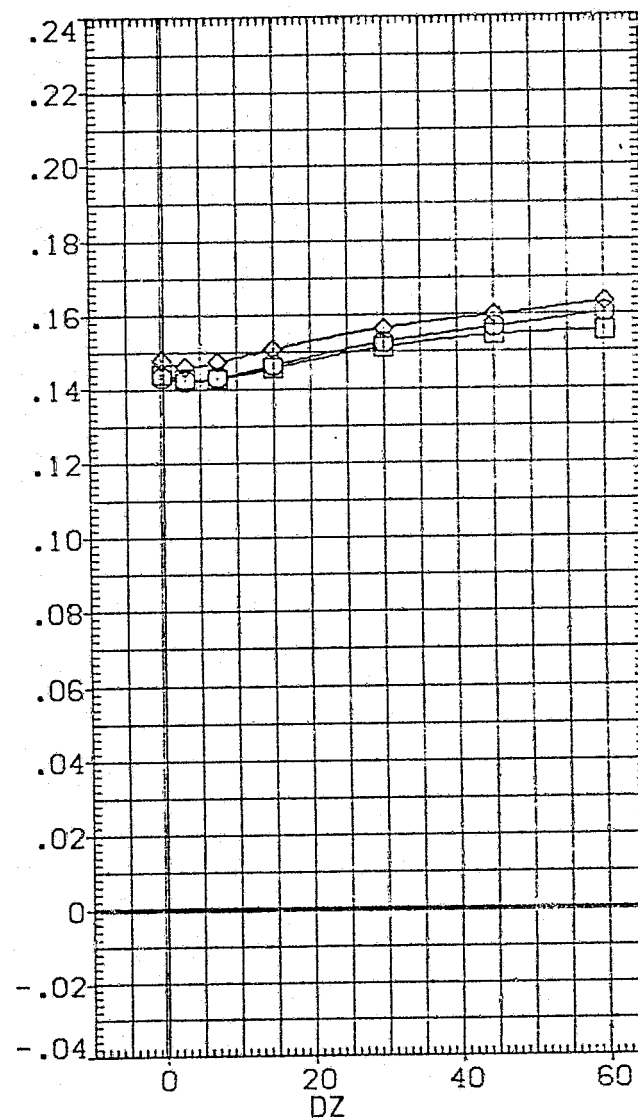
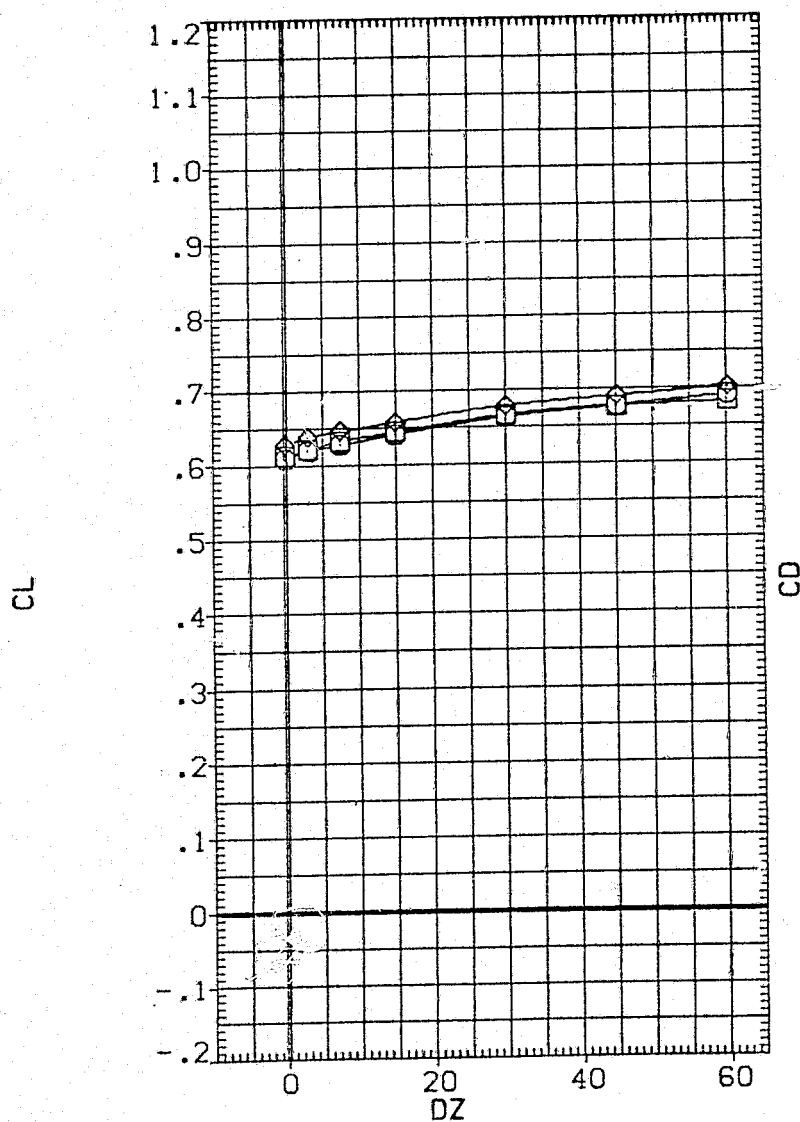


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (NGN142) ○ DATA NOT AVAILABLE
 (26N052) □ CA20 747/1 01 S1
 (NGN141) ◇ DATA NOT AVAILABLE

ORBITER DATA	ELV-IB	ELV-OB	ALPHAC	DX	REFERENCE INFORMATION	
	-10.000	-7.000	4.000	.000	SREF	2690.0000 SC.FT.
	.000	3.000	4.000	.000	LREF	474.8100 IN.
	10.000	13.000	4.000	.000	BREF	936.6800 IN.
					XMRP	1109.0000 IN.X0
					YMRP	.0000 IN.Y0
					ZMRP	375.0000 IN.Z0
					SCALE	.0300

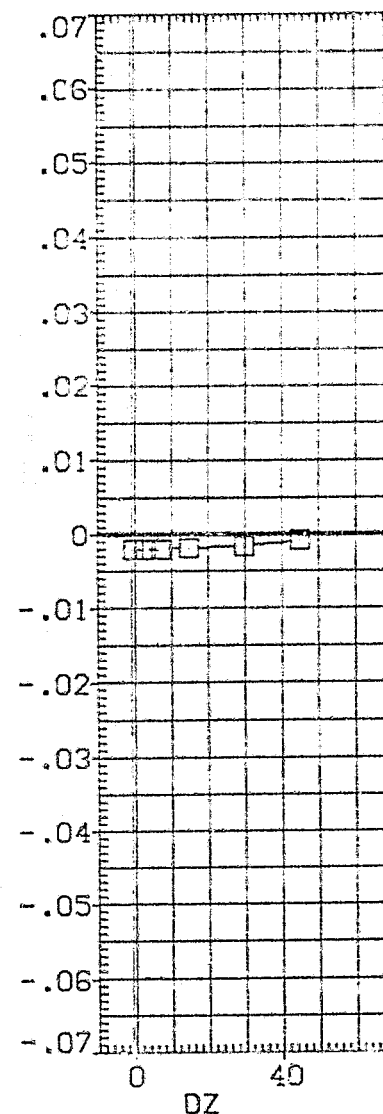
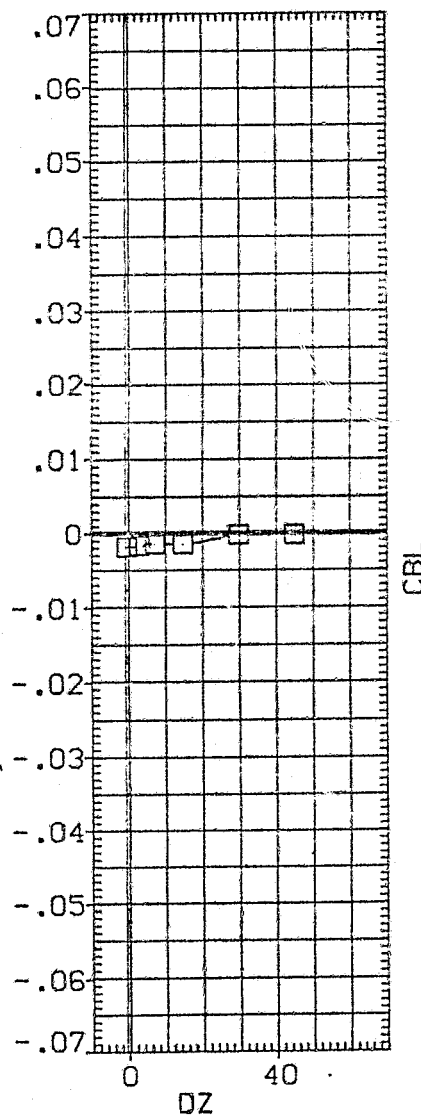
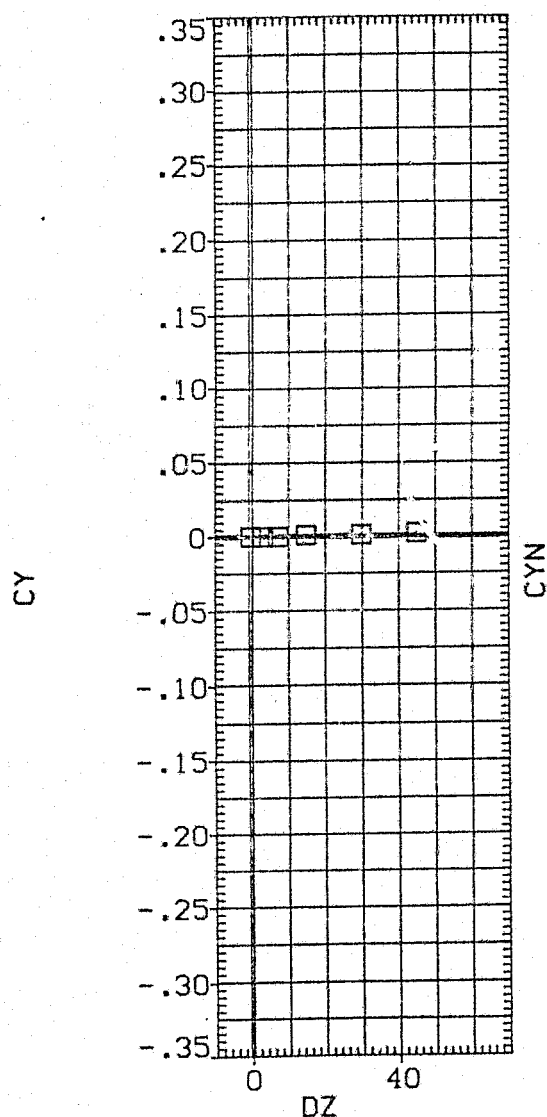


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A)ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	CA20 747/1 01 S1
(2GN052)	CA20 747/1 01 S1
(NGN141)	CA20 747/1 01 S1

	ELV-1B	ELV-0B	ALPHAC	DX	REFERENCE INFORMATION
ORBITER DATA	-10.000	-7.000	4.000	.000	SREF 2690.0000 SQ.FT.
ORBITER DATA	.000	3.000	4.000	.000	LREF 474.8100 IN.
ORBITER DATA	10.000	13.000	4.000	.000	BREF 936.6600 IN.
					XMRP 1109.0000 IN.X0
					YMRP .0000 IN.Y0
					ZMRP 375.0000 IN.Z0
					SCALE .0300

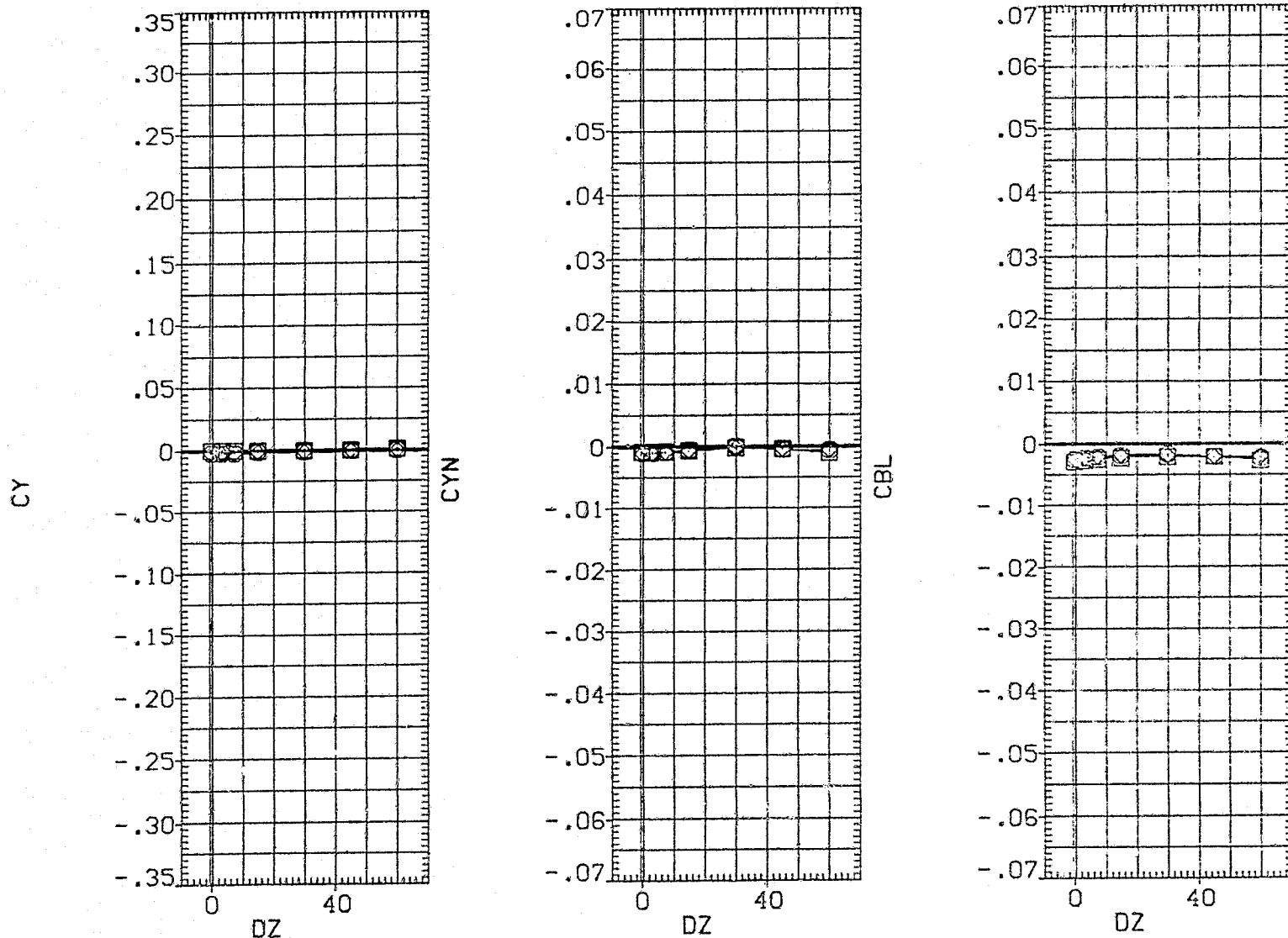


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(NGN142)	CA20 747/1 01 S1
(ZGN052)	CA20 747/1 01 S1
(NGN141)	CA20 747/1 01 S1

	-IB	ELV-OB	ALPHAC	DX	REFERENCE INFORMATION
ORBITER DATA	- 0.000	-7.000	4.000	.000	SREF 2690.0000 SC.FT.
ORBITER DATA	.000	3.000	4.000	.000	LREF 474.8100 IN.
ORBITER DATA	10.000	13.000	4.000	.000	BREF 936.6800 IN.
					XMRP 1109.0000 IN.XC
					YMRP .0000 IN.YC
					ZMRP 375.0000 IN.ZC
					SCALE .0300

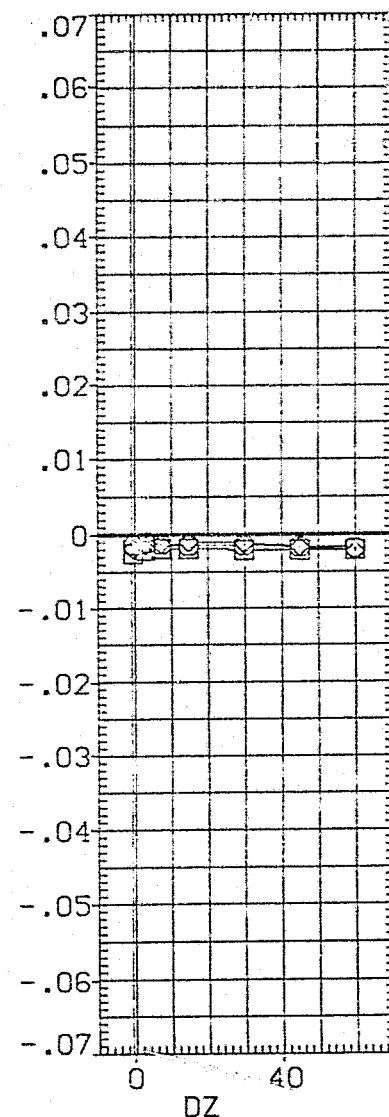
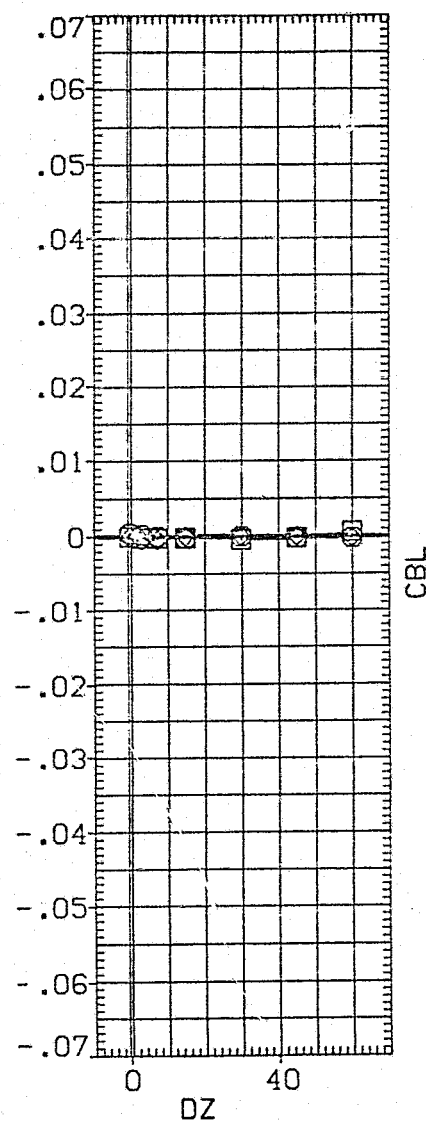
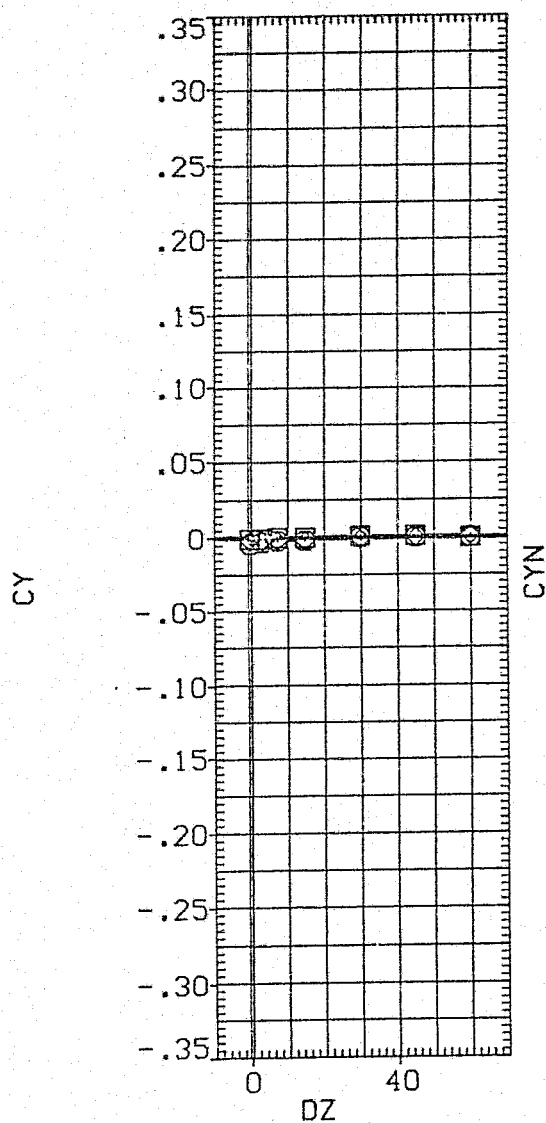


FIG 33 ELEVATOR EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (IGN052) CA20 747/1 01 S1
 (IGN143) DATA NOT AVAILABLE
 (IGN129) DATA NOT AVAILABLE
 (IGN144) DATA NOT AVAILABLE

CARRIER DATA

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	5500.0000	50.FT.
15.000	4.000	.000	.000	LREF	327.7800	IN.
.000	4.000	.000	.000	BREF	2346.0400	IN.
15.000	4.000	.000	.000	XMRP	1339.9000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

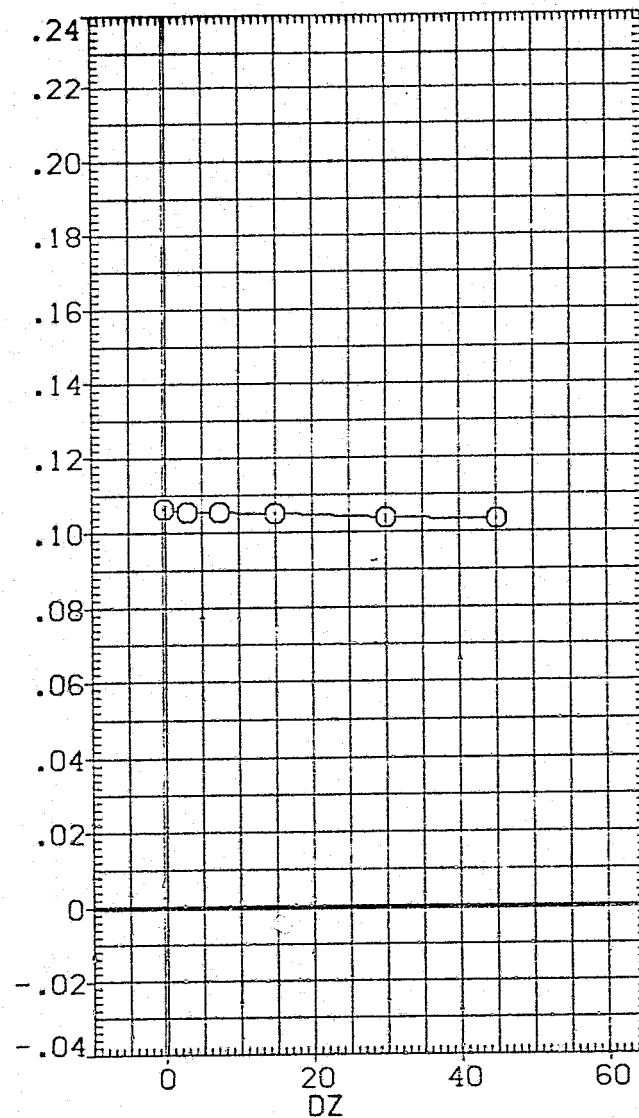
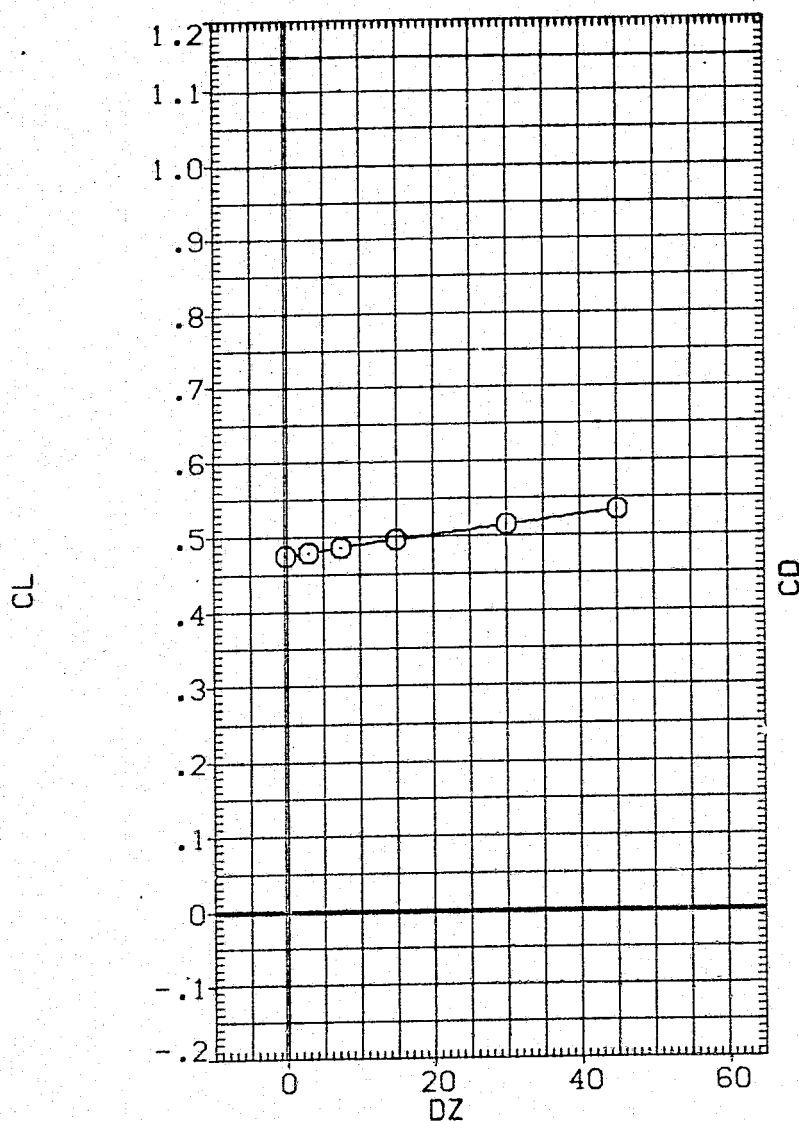


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN052)	CA20 747/1 01 S1
(IGN143)	CA20 747/1 01 S1
(IGN129)	CA20 747/1 02 S1
(IGN144)	CA20 747/1 02 S1

CARRIER DATA
RUDDER
ALPHAC
DX
BETAC

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
.000	4.000	.000	.000	SREF 5500.0000 50.FT
15.000	4.000	.000	.000	LREF 327.7800 IN.
.000	4.000	.000	.000	BREF 2348.0400 IN.
15.000	4.000	.000	.000	XMRP 1339.9000 IN.XC
				YMRP .0000 IN.YC
				ZMRP 190.8000 IN.ZC
				SCALE .0300

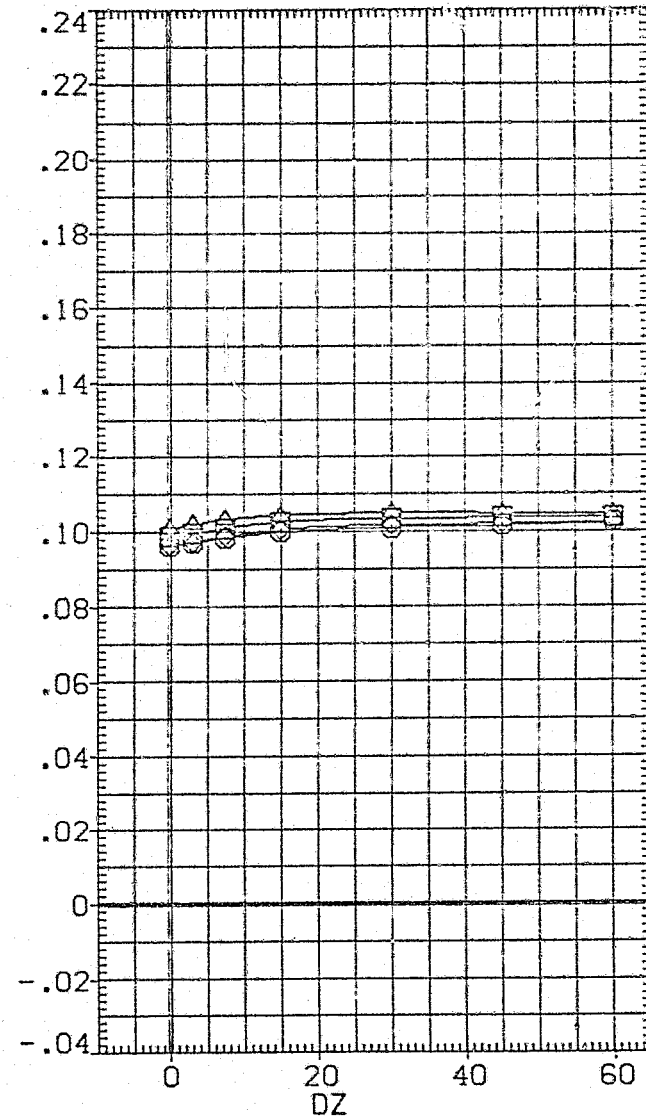
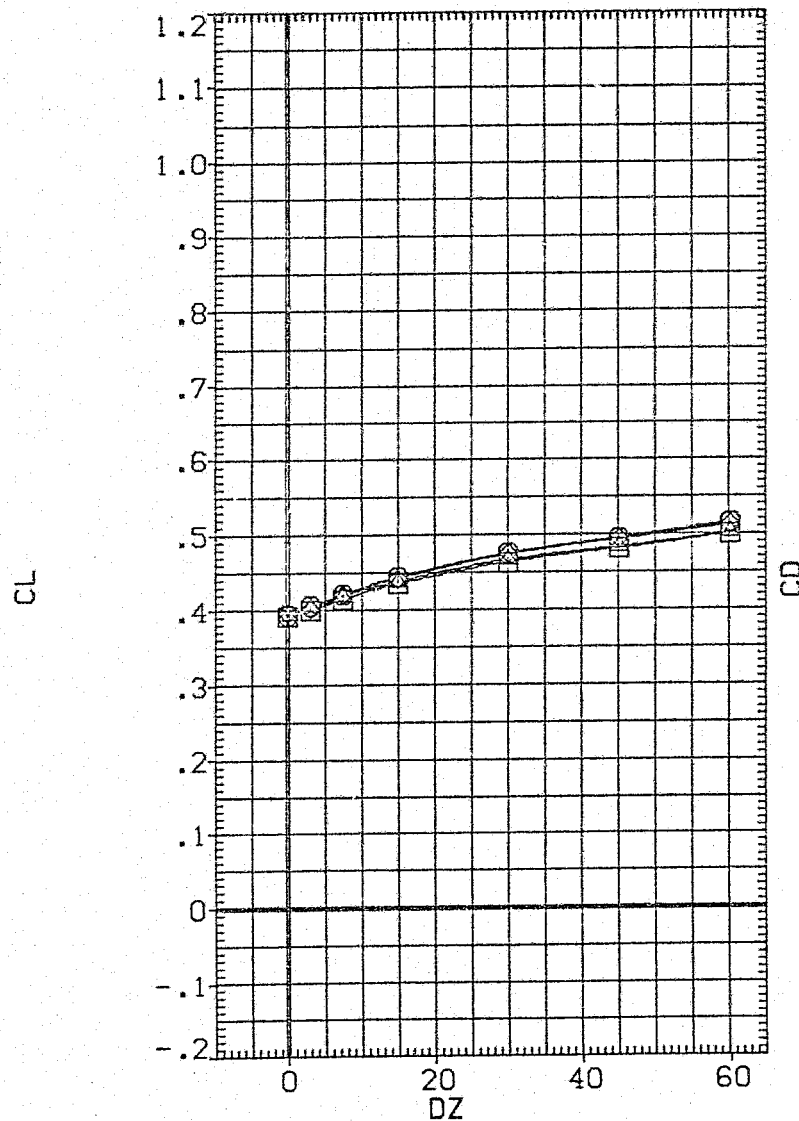


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN052)	CA20 747/1 01 S1
(IGN143)	CA20 747/1 01 S1
(IGN129)	CA20 747/1 02 S1
(IGN144)	DATA NOT AVAILABLE

CARRIER DATA
CARRIER DATA
CARRIER DATA

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	5500.0000	50.FT.
15.000	4.000	.000	.000	LREF	327.7800	IN.
.000	4.000	.000	.000	BREF	2348.0400	IN.
15.000	4.000	.000	.000	YMRP	1339.9000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

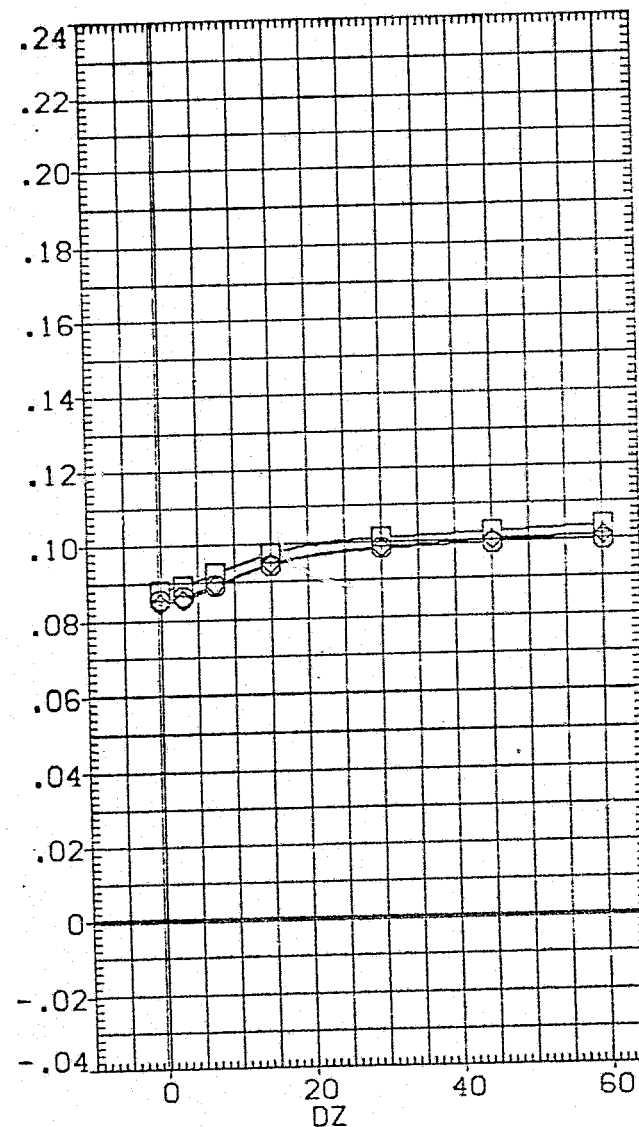
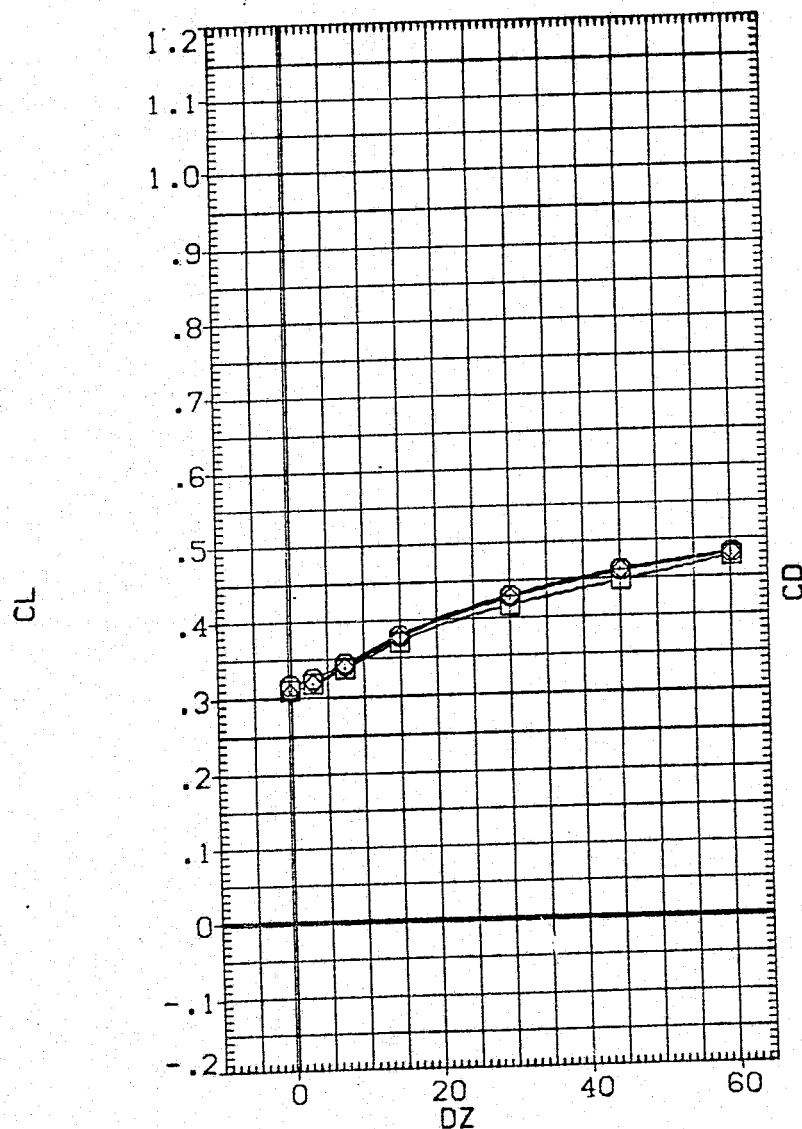


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN052)	CA20 747/1 01 S1
(IGN143)	DATA NOT AVAILABLE
(IGN129)	DATA NOT AVAILABLE
(IGN144)	DATA NOT AVAILABLE

CARRIER DATA

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION	
.000	4.000	.000	.000	SREF	5500.0000 SQ.FT.
15.000	4.000	.000	.000	LREF	327.7800 IN.
.000	4.000	.000	.000	BREF	2348.0400 IN.
15.000	4.000	.000	.000	XMRF	1339.9000 IN.XC
				YMRP	.0000 IN.YC
				ZMRP	190.8000 IN.ZC
				SCALE	.0300

PITCHING MOMENT COEFFICIENT, CLM

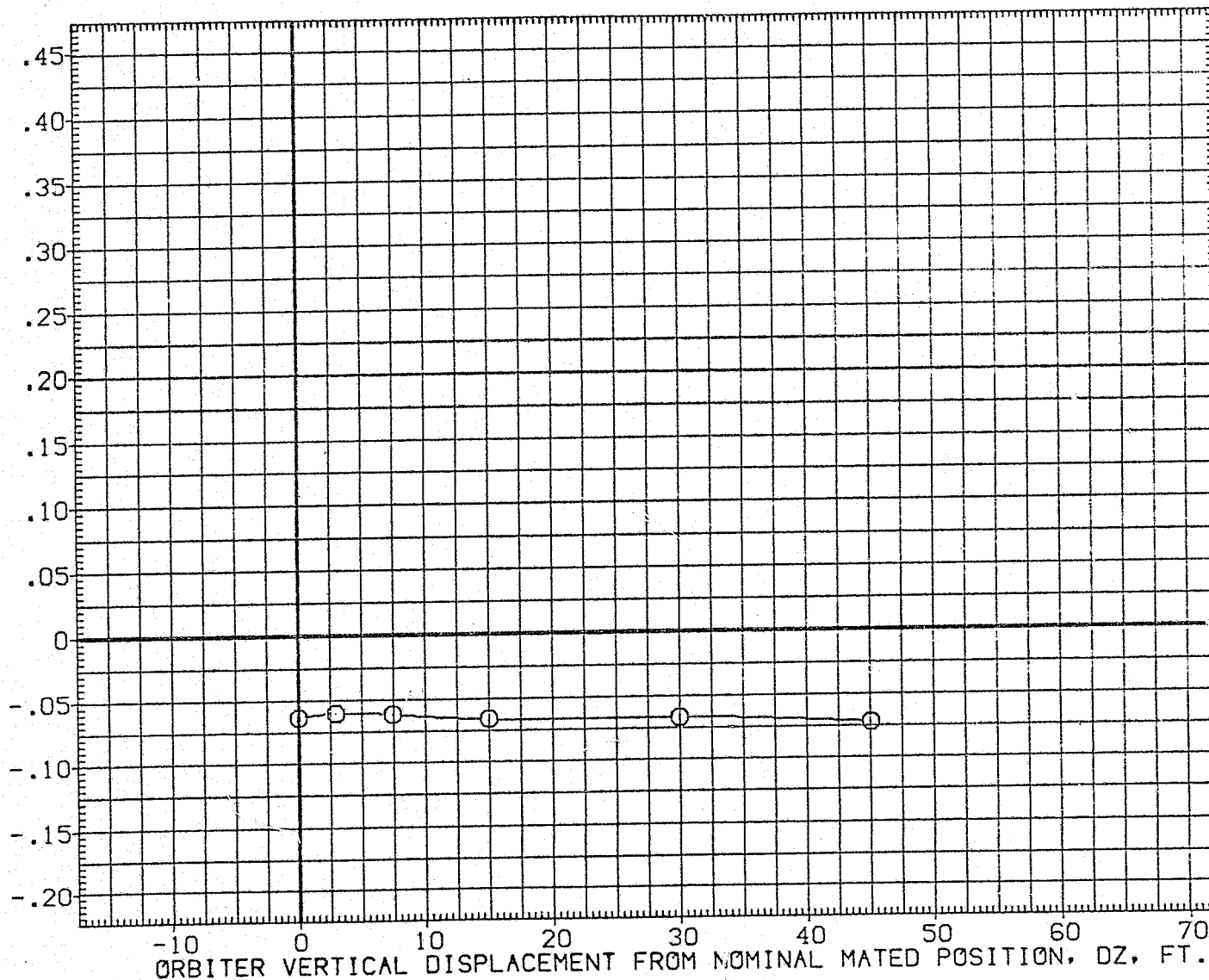


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	SYMBOL	CONFIGURATION	DESCRIPTION
(IGN052)	○	CA20	747/1 01 S1
(IGN143)	□	CA20	747/1 01 S1
(IGN129)	◇	CA20	747/1 02 S1
(IGN144)	△	CA20	747/1 02 S1

	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
CARRIER DATA	.000	4.000	.000	.000	SREF	5500.0000	SQ.FT.
CARRIER DATA	15.000	4.000	.000	.000	LREF	327.7800	IN.
CARRIER DATA	.000	4.000	.000	.000	BREF	2348.0400	IN.
CARRIER DATA	15.000	4.000	.000	.000	XMHP	1339.9000	IN.XC
					YMHP	.0000	IN.YC
					ZMHP	190.8000	IN.ZC
					SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

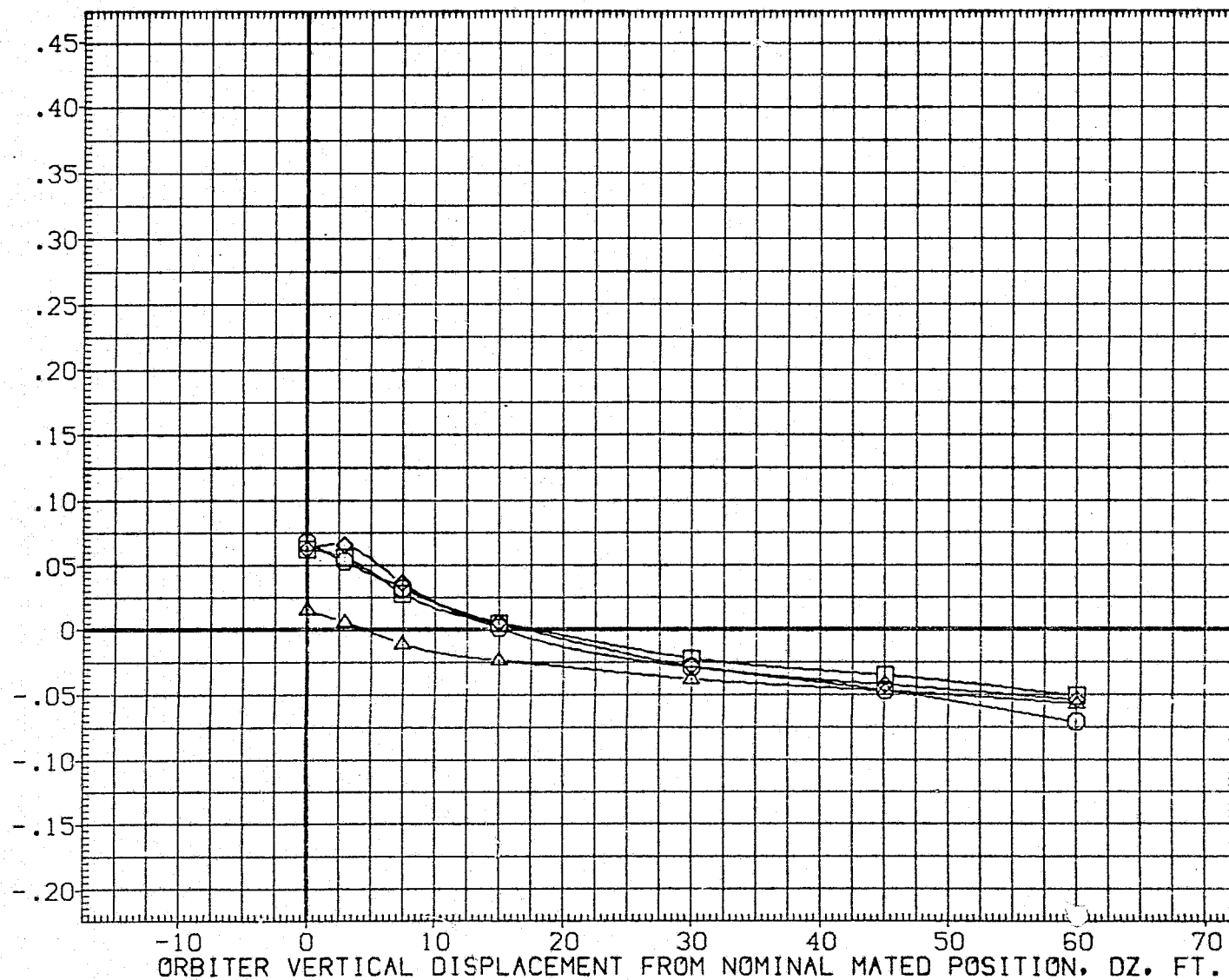


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN052)	CA20 747/1 01 S1
(IGN143)	CA20 747/1 01 S1
(IGN129)	CA20 747/1 02 S1
(IGN144)	DATA NOT AVAILABLE

CARRIER DATA
RUDDER
ALPHAC
DX
BETAC

.000	4.000	.000	.000
15.000	4.000	.000	.000
.000	4.000	.000	.000
15.000	4.000	.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.9400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

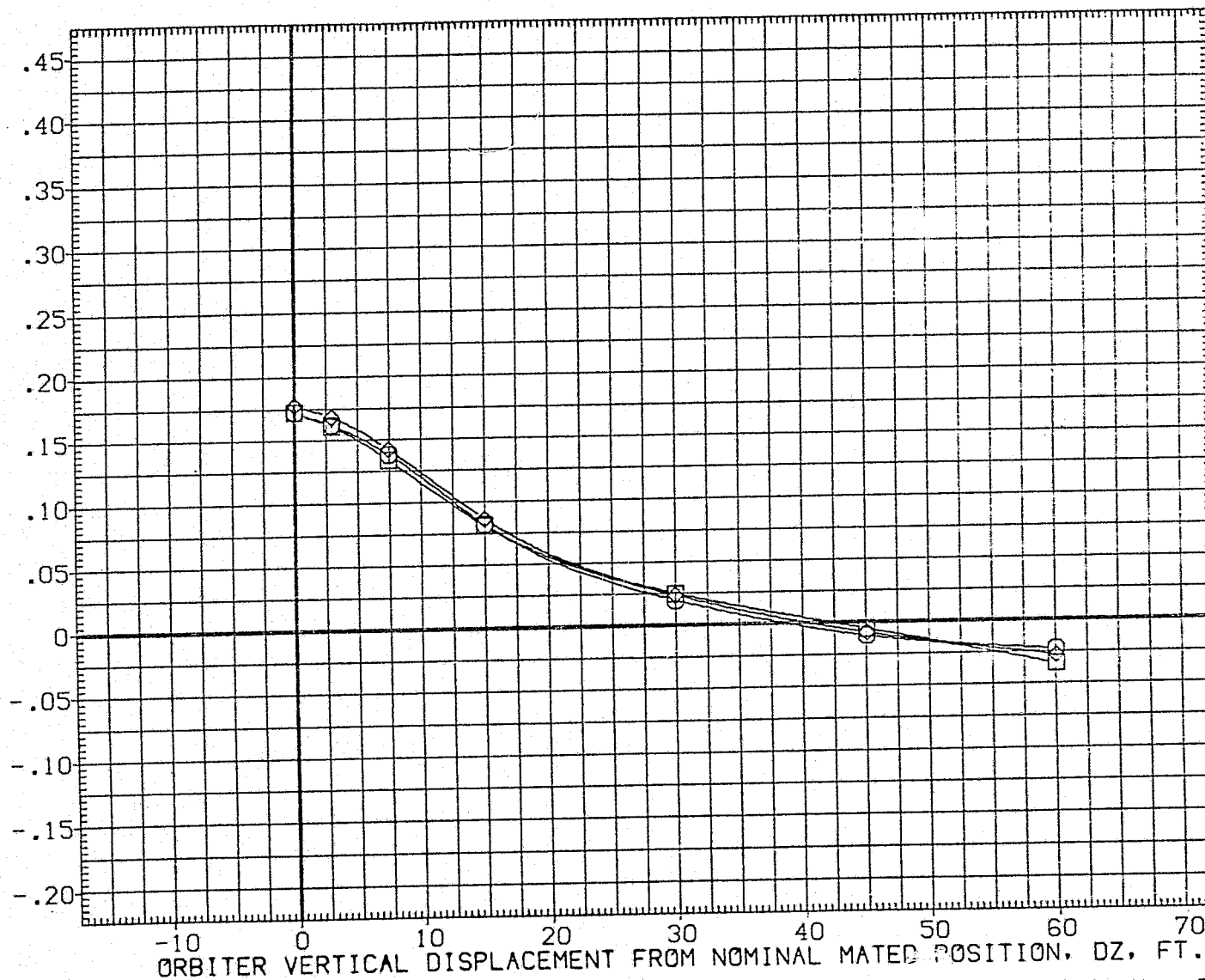


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (IGN052) \square CA20 747/1 01 S1
 (IGN143) \square DATA NOT AVAILABLE
 (IGN129) \square DATA NOT AVAILABLE
 (IGN144) \square DATA NOT AVAILABLE

CARRIER DATA				REFERENCE INFORMATION		
RUDDER	ALPHAC	DX	BETAC	SREF	5500.0000	SO.FT.
.000	4.000	.000	.000	LREF	327.7800	IN.
15.000	4.000	.000	.000	BREF	2349.0400	IN.
.000	4.000	.000	.000	XMRP	1339.9000	IN.XC
15.000	4.000	.000	.000	YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

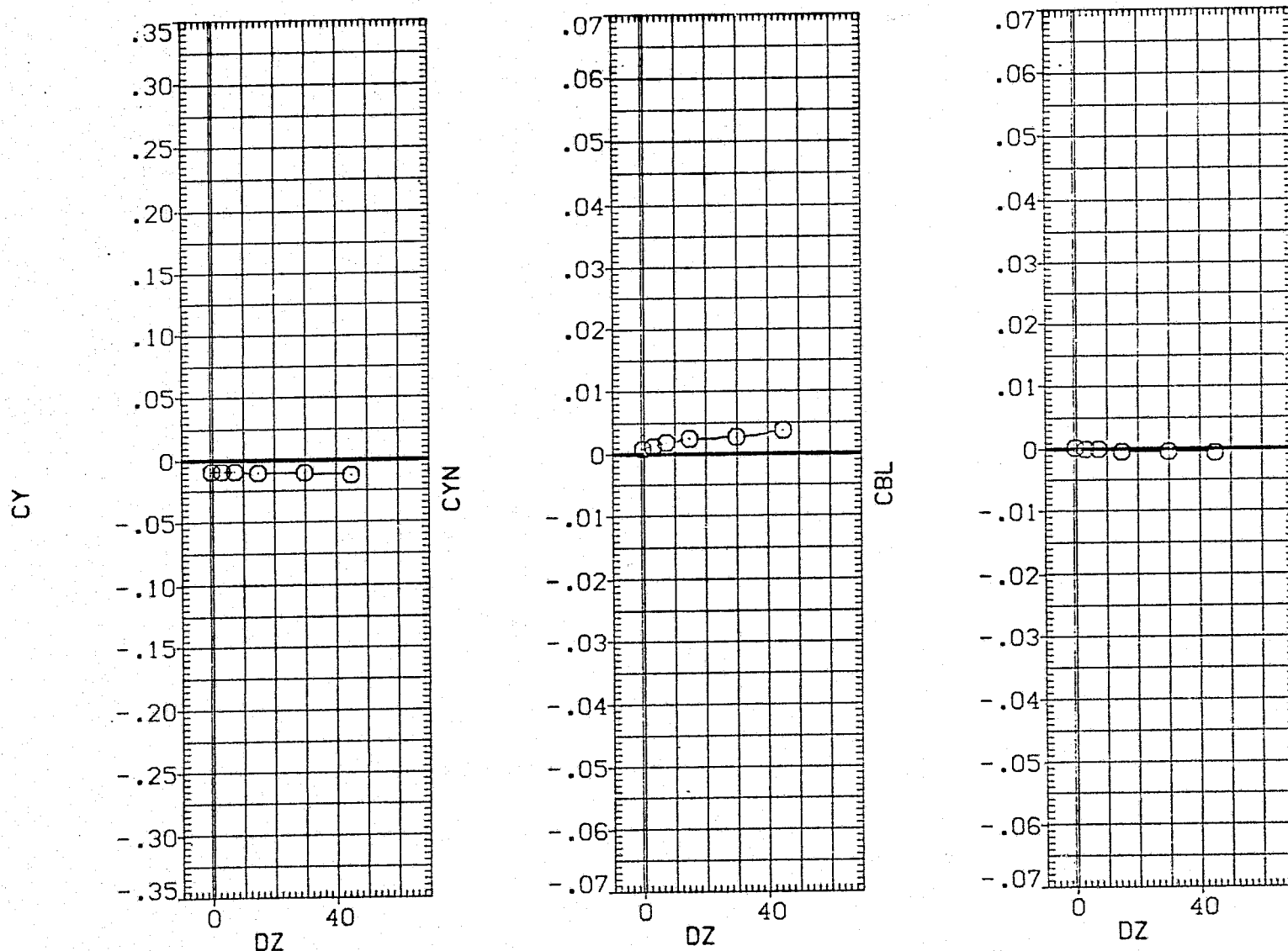


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (A) $\alpha = 6.00$ PAGE 1636

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(IGN052)	○	CA20	747/1 01 SI
(IGN143)	□	CA20	747/1 01 SI
(IGN129)	⊗	CA20	747/1 02 SI
(IGN144)	△	CA20	747/1 02 SI

	RUDDER	ALPHAC	DX
CARRIER DATA	.000	4.000	.000
CARRIER DATA	15.000	4.000	.000
CARRIER DATA	.000	4.000	.000
CARRIER DATA	15.000	4.000	.000

BETAC	REFERENCE INFORMATION
.000	SREF 5500.0000 SQ.FT.
.000	LREF 327.7800 IN.
.000	BREF 2348.0400 IN.
.000	XMRP 1339.9000 IN.XC
.000	YMRP .0000 IN.YC
.000	ZMRP 190.8000 IN.ZC
.000	SCALE .0300

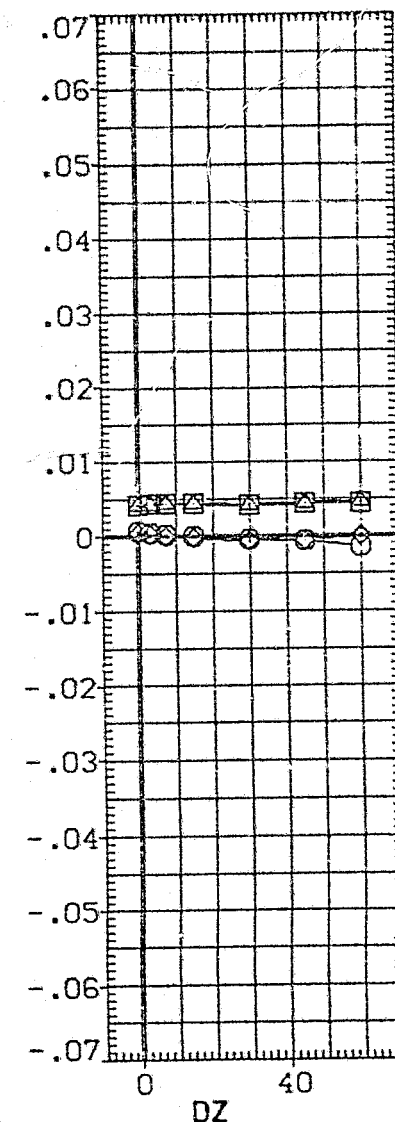
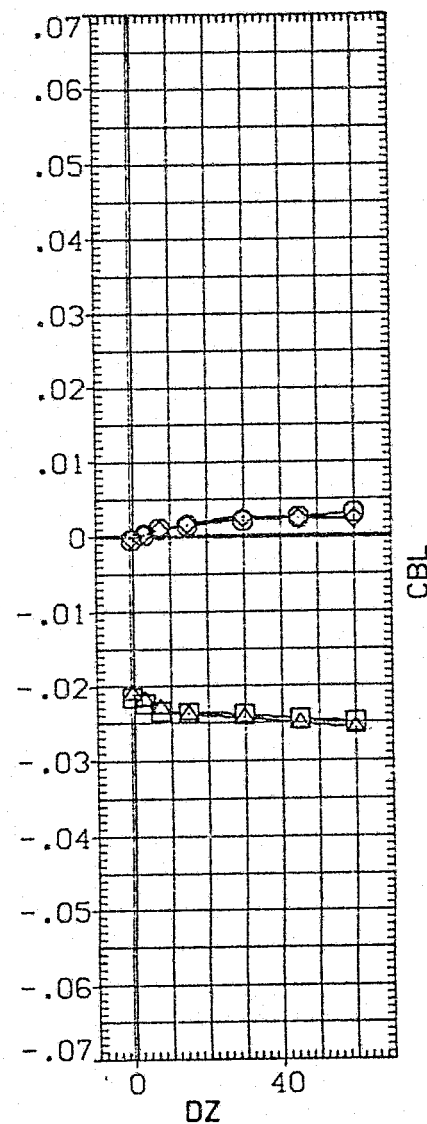
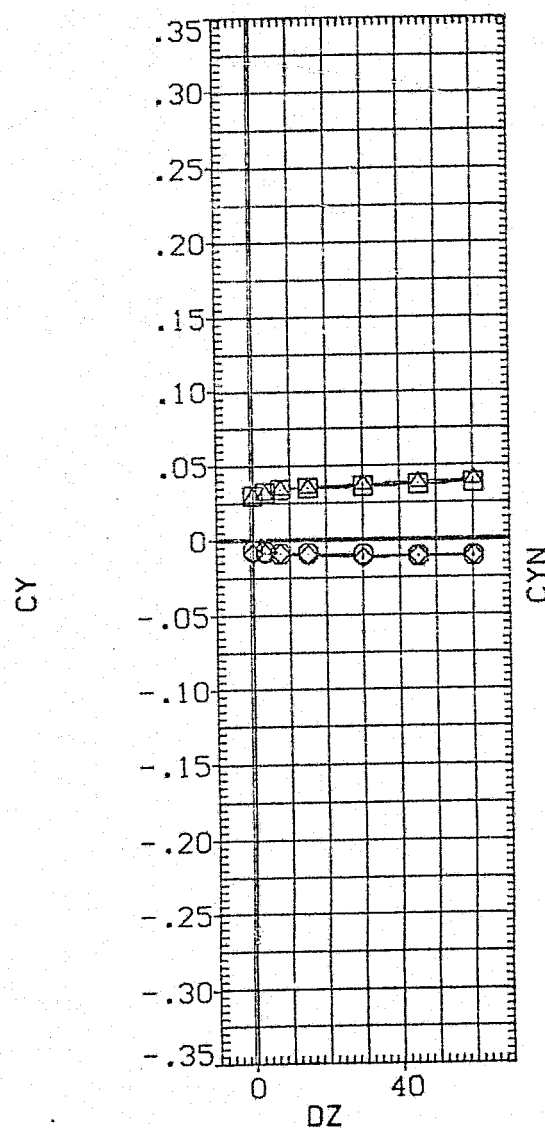


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN052)	CA20 747/1 01 S1
(IGN143)	CA20 747/1 01 S1
(IGN129)	CA20 747/1 02 S1
(IGN144)	DATA NOT AVAILABLE

	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
CARRIER DATA	.000	4.000	.000	.000	SREF 5500.0000 SQ.FT.
CARRIER DATA	15.000	4.000	.000	.000	LREF 327.7800 IN.
CARRIER DATA	.000	4.000	.000	.000	BREF 2348.0400 IN.
	15.000	4.000	.000	.000	XMRP 1339.9000 IN.XC
					YMRP .0000 IN.YC
					ZMRP 190.8000 IN.ZC
					SCALE .0300

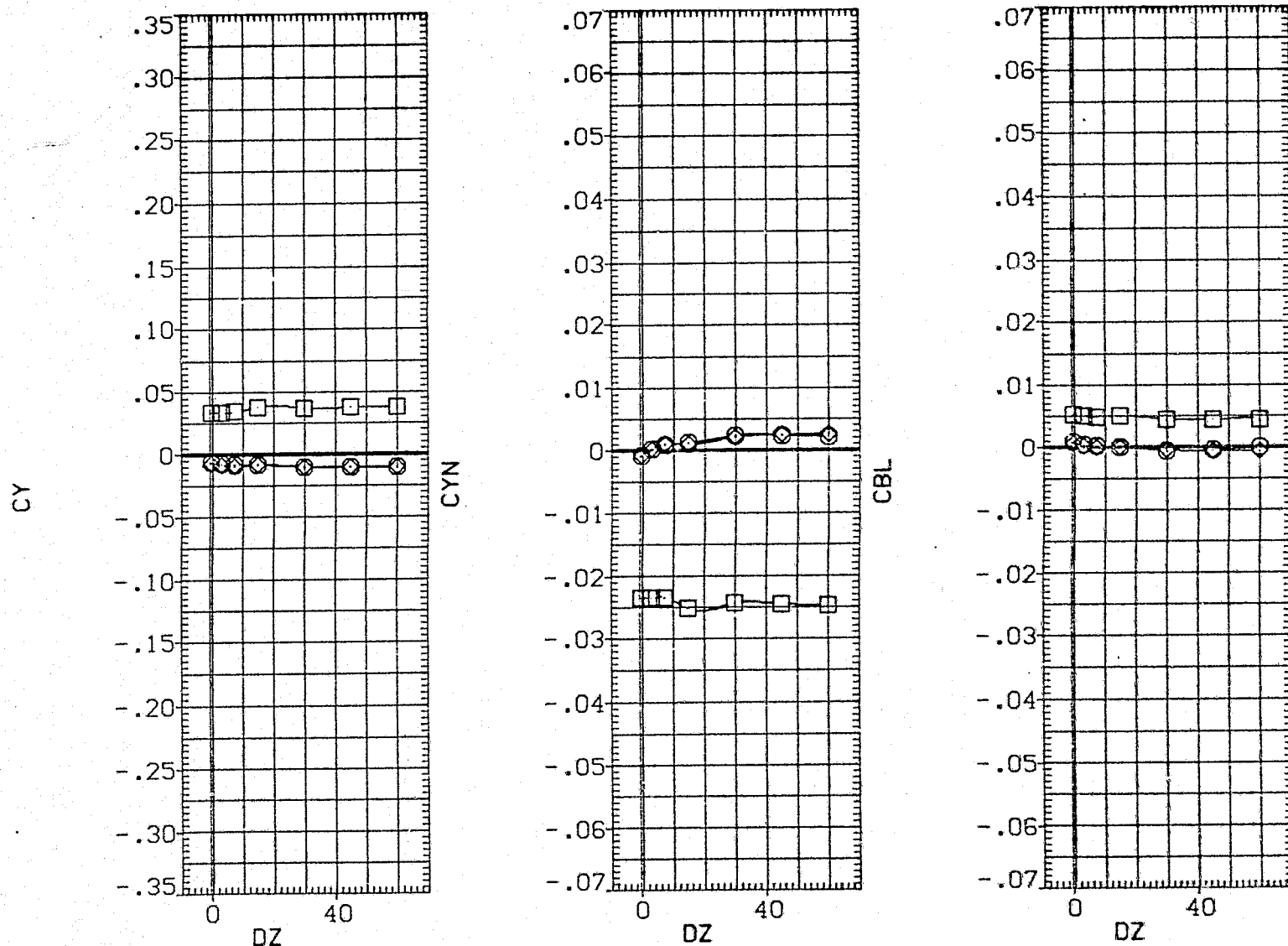


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN052)	CA20 747/1 01 SI
(IGN143)	DATA NOT AVAILABLE
(IGN129)	DATA NOT AVAILABLE
(IGN144)	DATA NOT AVAILABLE

CARRIER DATA	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
	.000	4.000	.000	.000	SREF 5500.0000 SQ.FT.
	15.000	4.000	.000	.000	LREF 327.7800 IN.
	.000	4.000	.000	.000	BREF 2348.0400 IN.
	15.000	4.000	.000	.000	XMRP 1339.9000 IN.XC
					YMRP .0000 IN.YC
					ZMRP 190.8000 IN.ZC
					SCALE .0300

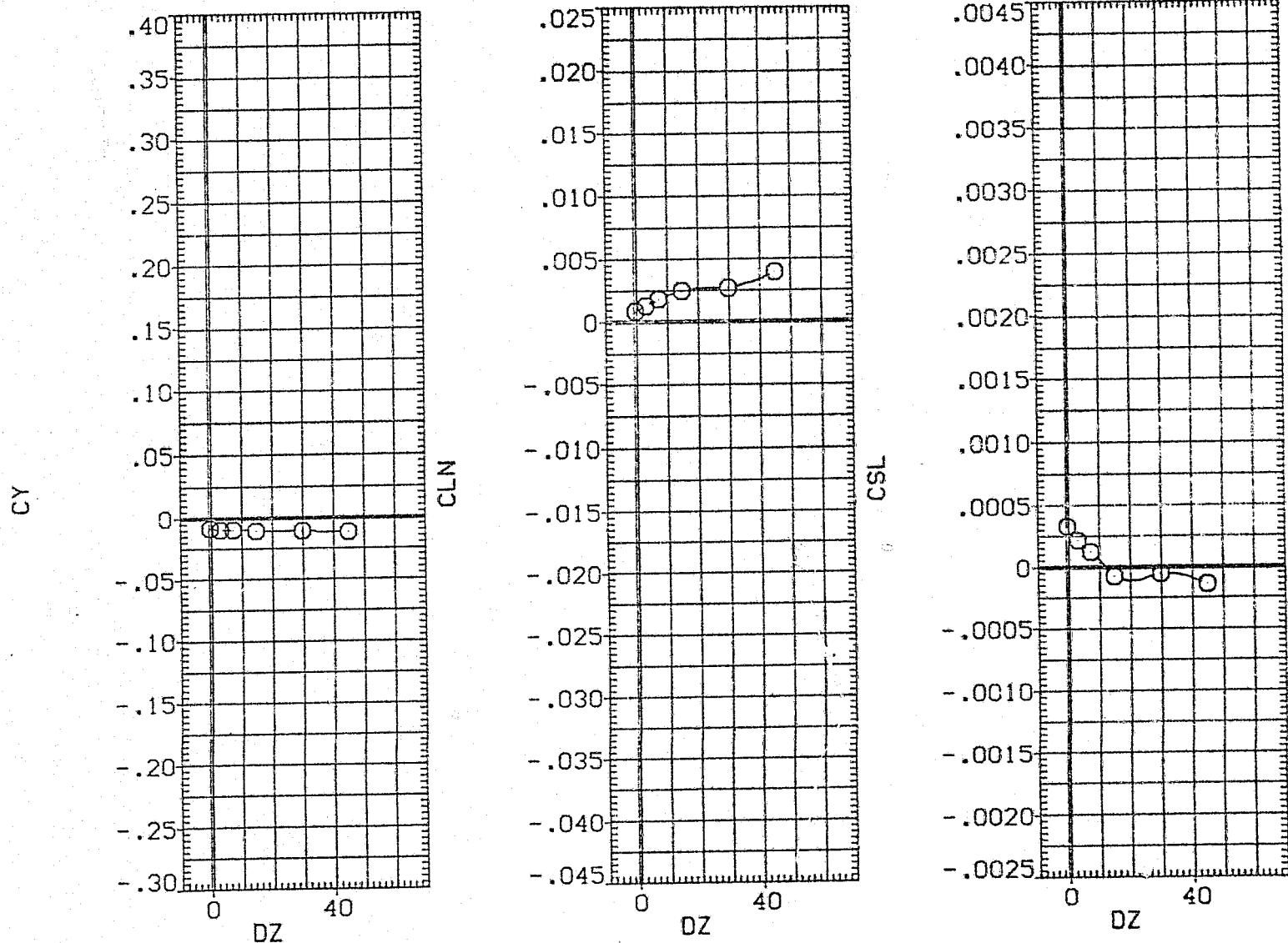


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (A) $\alpha_0 = 6.00$ PAGE 1639

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN052)	CA20 747/1 01 S1
(IGN143)	CA20 747/1 01 S1
(IGN129)	CA20 747/1 02 S1
(IGN144)	CA20 747/1 02 S1

	RUDDER	ALPHA C	DX	BETAC	REFERENCE INFORMATION
CARRIER DATA	.000	4.000	.000	.000	SREF 5500.0000 SQ.FT.
CARRIER DATA	15.000	4.000	.000	.000	LREF 327.7800 IN.
CARRIER DATA	.000	4.000	.000	.000	BREF 2348.0400 IN.
CARRIER DATA	15.000	4.000	.000	.000	XMRP 1339.9000 IN.XC
					YMRP .0000 IN.YC
					ZMRP 190.8000 IN.ZC
					SCALE .0300

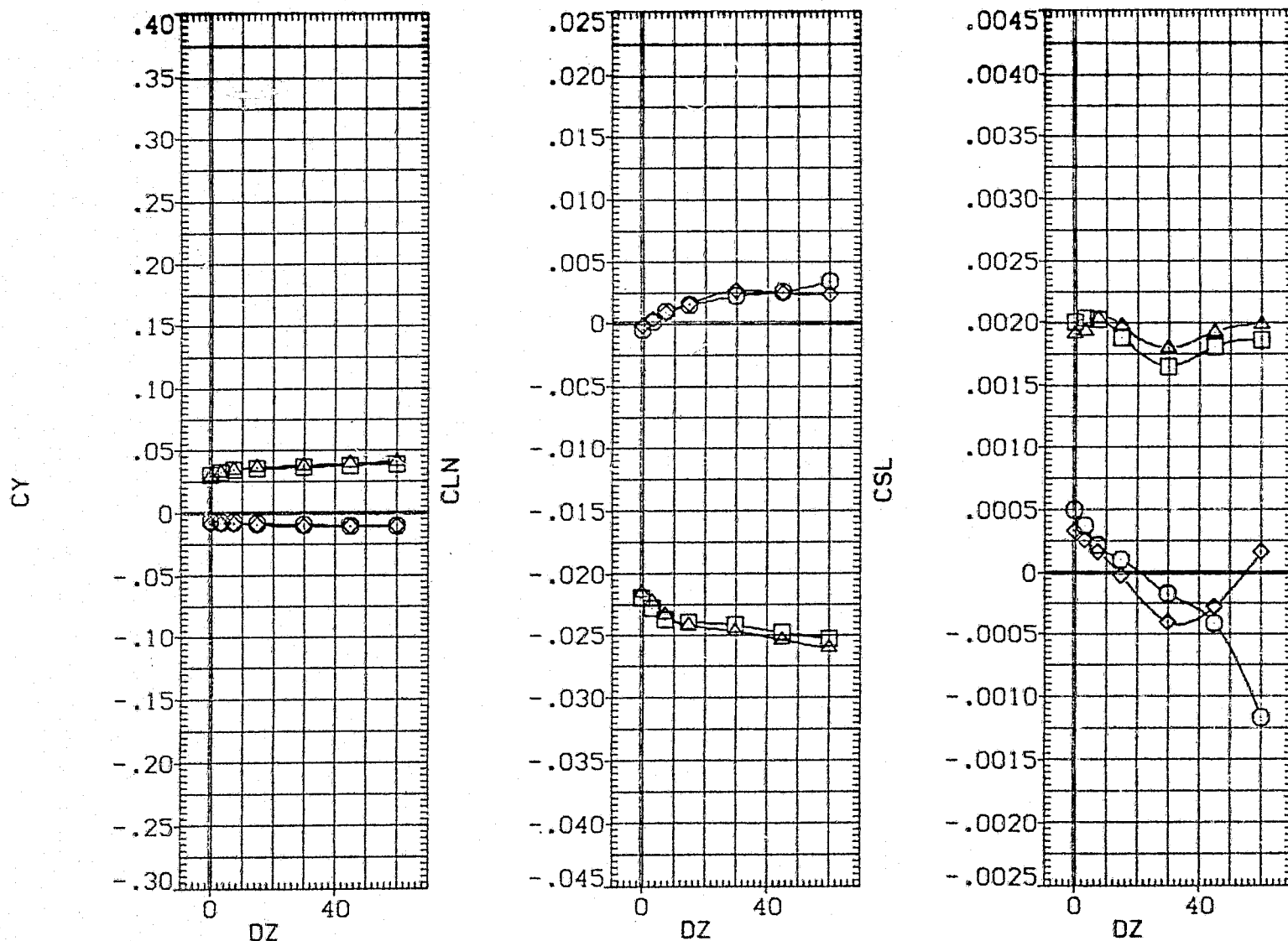


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN052)	CA20 747/1 01 S1
(IGN143)	CA20 747/1 01 S1
(IGN129)	CA20 747/1 02 S1
(IGN144)	DATA NOT AVAILABLE

	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
CARRIER DATA	.000	4.000	.000	.000	SREF 5500.0000 SQ.FT.
CARRIER DATA	15.000	4.000	.000	.000	LREF 327.7800 IN.
CARRIER DATA	.000	4.000	.000	.000	BREF 2348.0400 IN.
	15.000	4.000	.000	.000	XMRP 1339.9000 IN.XC
					YMRP .0000 IN.YC
					ZMRP 190.8000 IN.ZC
					SCALE .0300

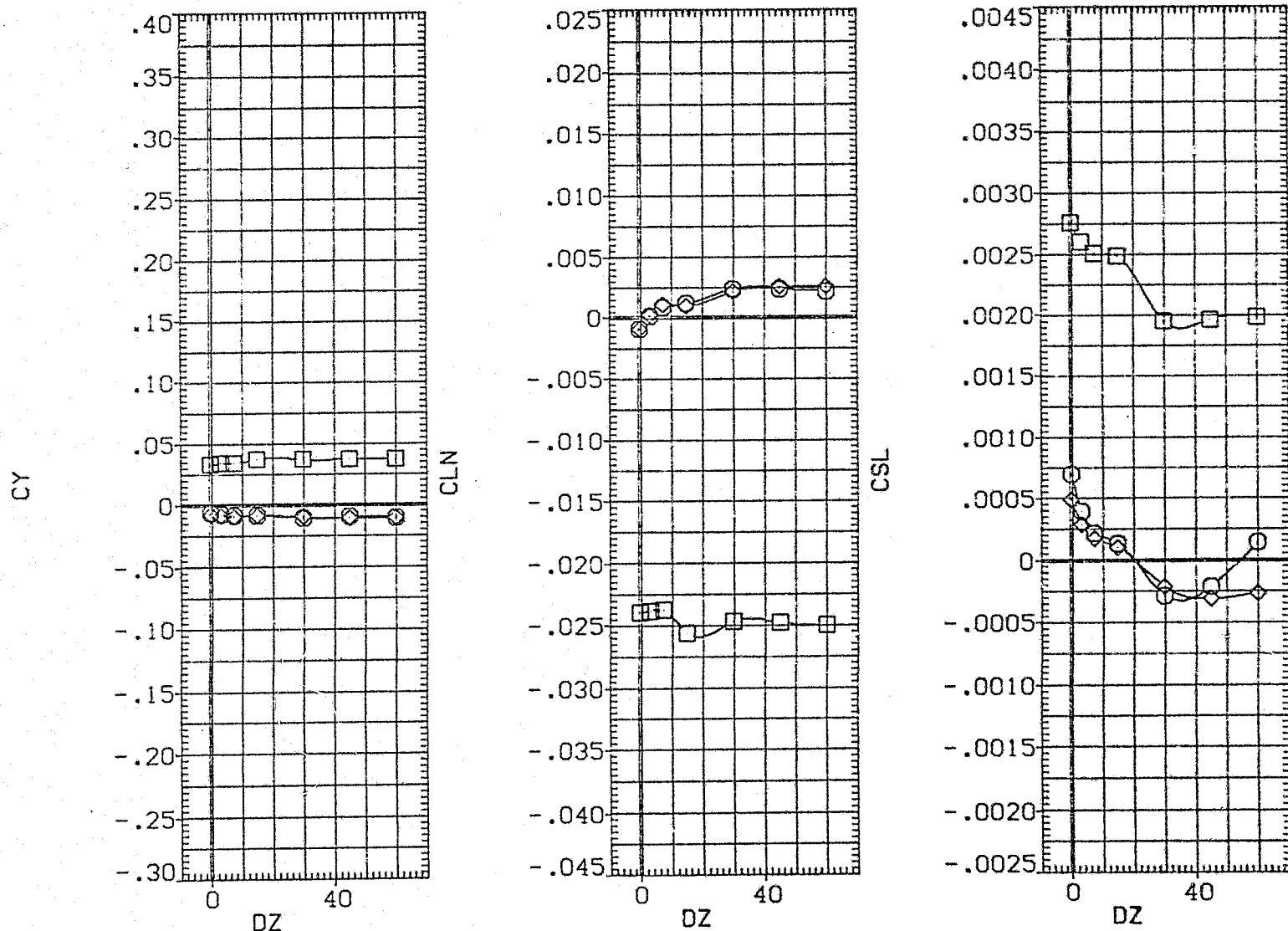


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S (052 - 035)
(KGN052)	CA20 (747/1 01 S1) - (747/1)	
(KGN143)	DATA NOT AVAILABLE	
(KGN129)	DATA NOT AVAILABLE	
(KGN144)	DATA NOT AVAILABLE	

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	5500.0000	SQ.FT.
15.000	4.000	.000	.000	LREF	327.7800	IN.
.000	4.000	.000	.000	BREF	2348.0400	IN.
15.000	4.000	.000	.000	XMRP	1339.9000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

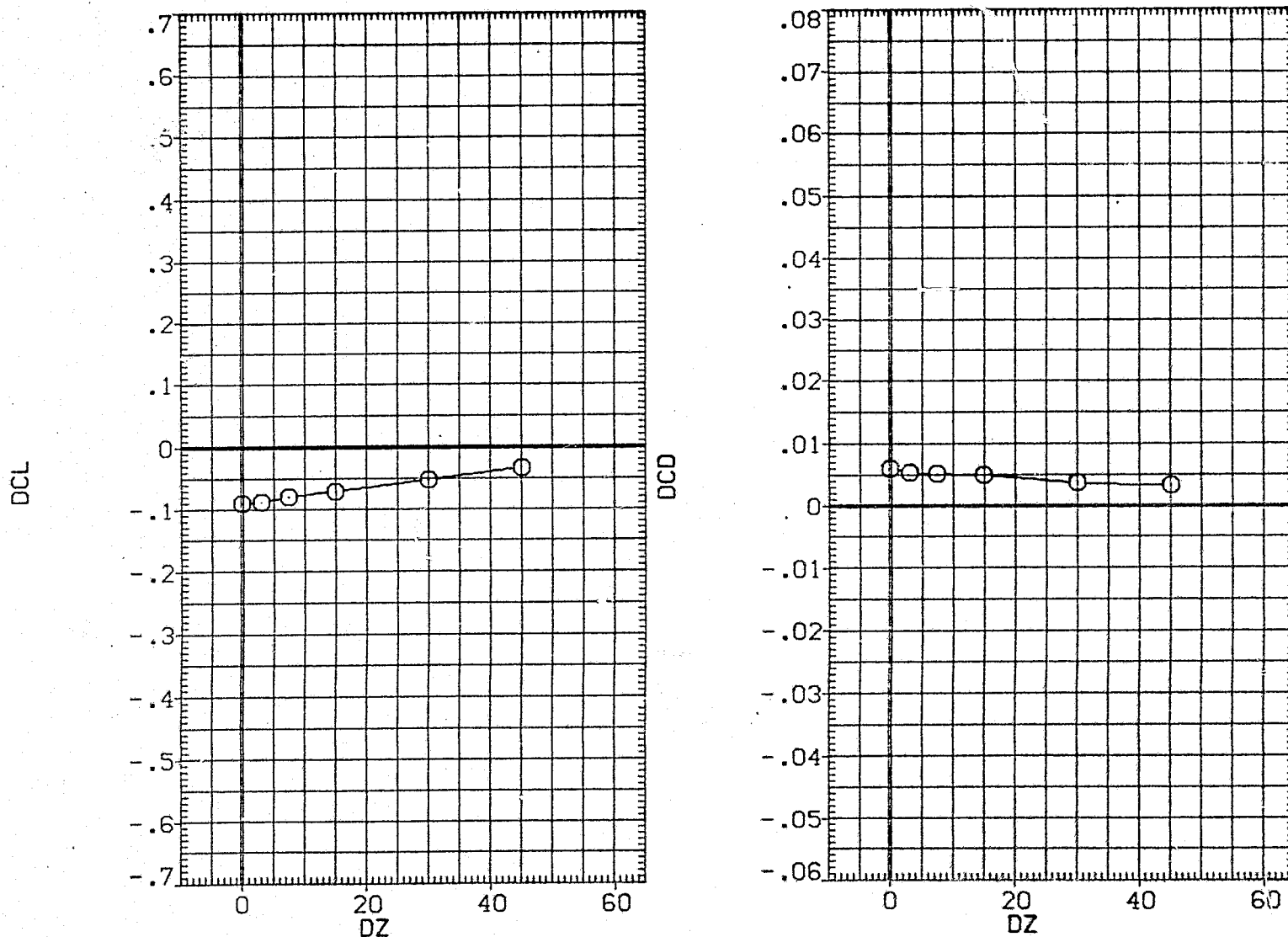


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (A) $\alpha = 6.00$ PAGE 1642

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S (052 - 035)	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
(KGN052)	CA20 (747/1 01 S1) - (747/1)	D/S (052 - 035)	.000	4.000	.000	.000	SREF	5500.0000	SQ.FT.
(KGN143)	CA20 (747/1 01 S1) - (747/1)	D/S (143 - 035)	15.000	4.000	.000	.000	LREF	327.7800	IN.
(KGN129)	CA20 (747/1 02 S1) - (747/1)	D/S (129 - 035)	.000	4.000	.000	.000	BREF	2348.0400	IN.
(KGN144)	CA20 (747/1 02 S1) - (747/1)	D/S (144 - 035)	15.000	4.000	.000	.000	XMRP	1339.9000	IN.XC
							YMRP	.0000	IN.YC
							ZMRP	190.8000	IN.ZC
							SCALE	.0300	

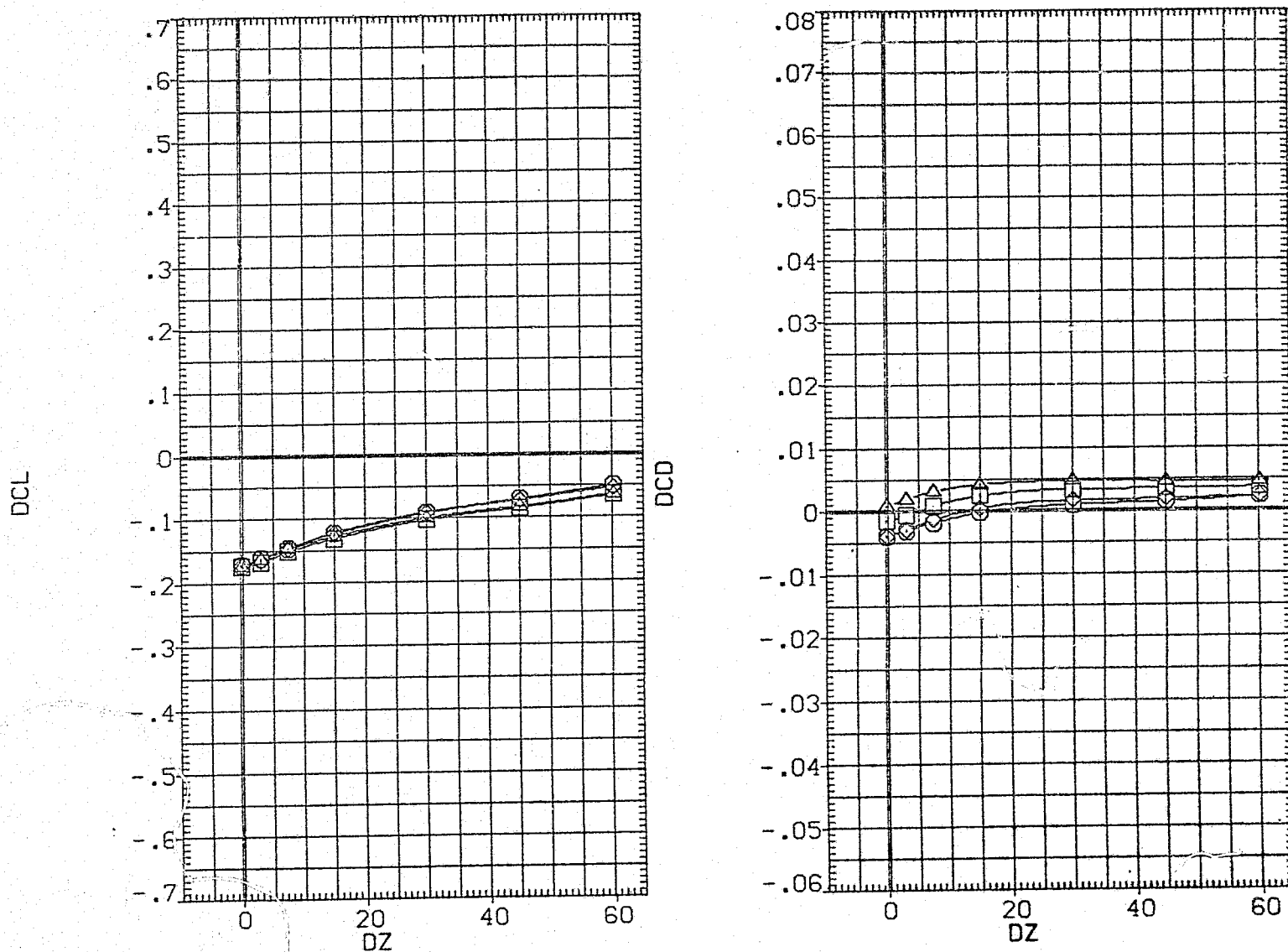


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA_0 = 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S
[KGN052]	CA20 (747/1 01 S1) - (747/1)	D/S (052 - 035)
[KGN143]	CA20 (747/1 01 S1) - (747/1)	D/S (143 - 035)
[KGN129]	CA20 (747/1 02 S1) - (747/1)	D/S (129 - 035)
[KGN144]	DATA NOT AVAILABLE	

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	5500.0000	50.FT.
15.000	4.000	.000	.000	LREF	327.7800	IN.
.000	4.000	.000	.000	BREF	2348.0400	IN.
15.000	4.000	.000	.000	XMRP	1339.9000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

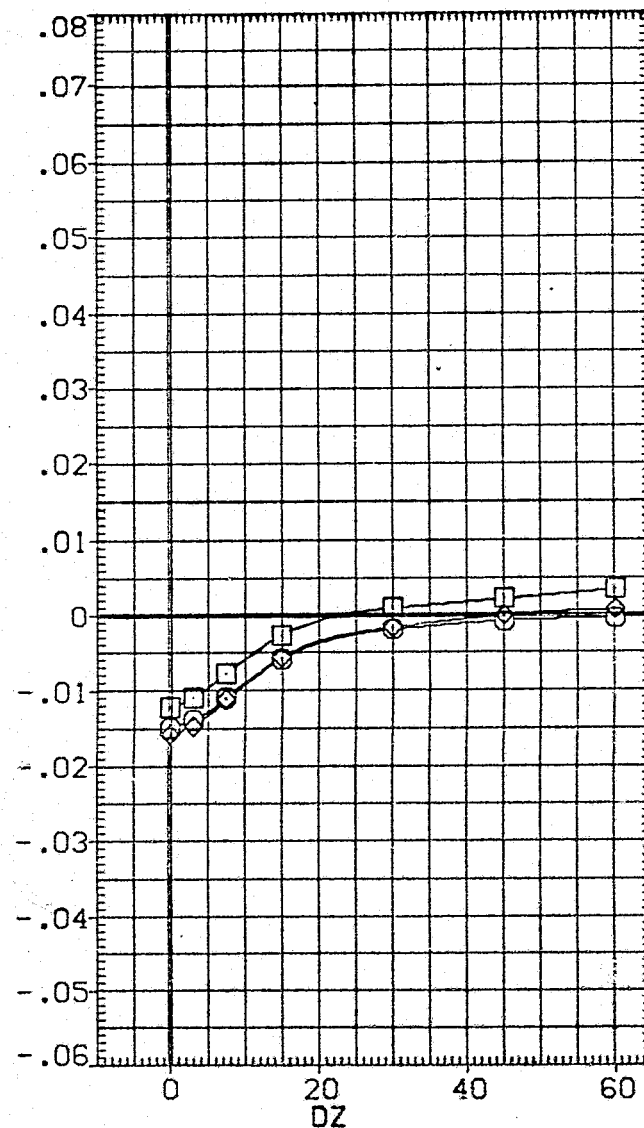
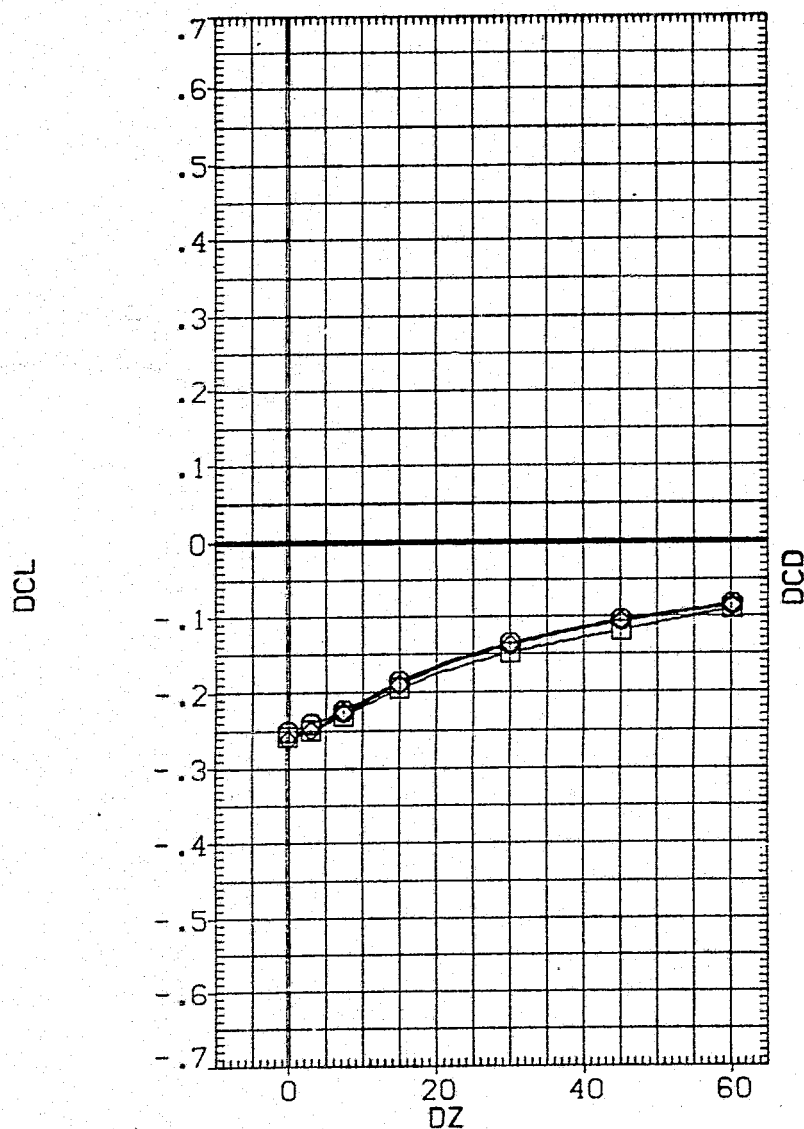


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (KGN052) CA20 (747/1 01 S1) - (747/1)
 (KGN143) DATA NOT AVAILABLE
 (KGN129) DATA NOT AVAILABLE
 (KGN144) DATA NOT AVAILABLE

D/S (052 - 035)

RUDDER	ALPHAC	DX	BETAC
.000	4.000	.000	.000
15.000	4.000	.000	.000
.000	4.000	.000	.000
15.000	4.000	.000	.000

REFERENCE INFORMATION
 SREF 5500.0000 SQ.FT.
 LREF 327.7800 IN.
 BREF 2348.0400 IN.
 XMRP 1339.9000 IN.XC
 YMRP .0000 IN.YC
 ZMRP 190.8000 IN.ZC
 SCALE .0300

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

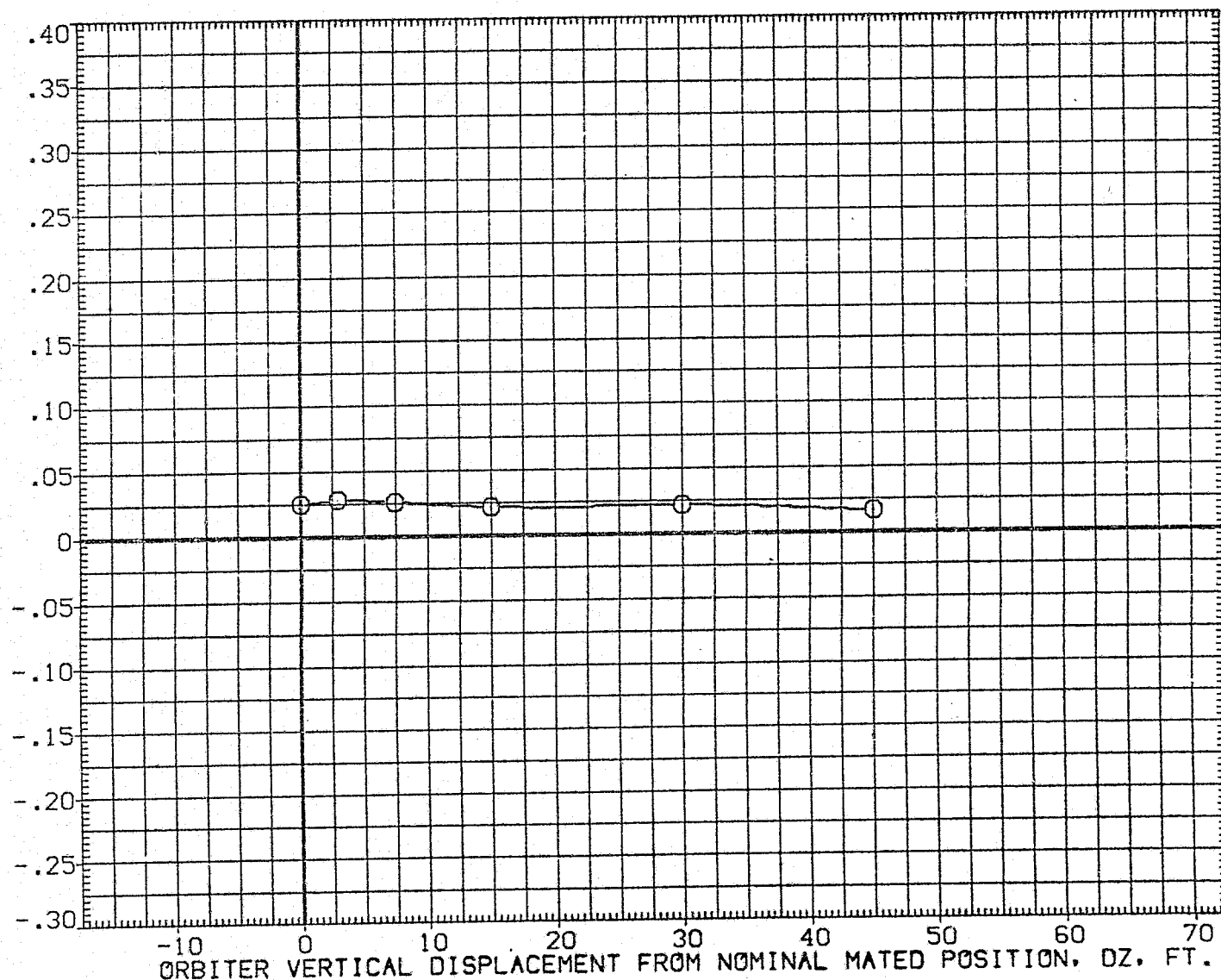


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A)ALPHA= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
(KGN052)	CA20 (747/1 01 S1) - (747/1)	0.000	4.000	.000	.000	SREF	5500.0000	50.FT.
(KGN143)	CA20 (747/1 01 S1) - (747/1)	15.000	4.000	.000	.000	LREF	327.7800	IN.
(KGN129)	CA20 (747/1 02 S1) - (747/1)	0.000	4.000	.000	.000	BREF	2349.0400	IN.
(KGN144)	CA20 (747/1 02 S1) - (747/1)	15.000	4.000	.000	.000	XMRP	1333.9000	IN.XC
						YMRP	.0000	IN.YC
						ZMRP	190.8000	IN.ZC
						SCALE	.0300	

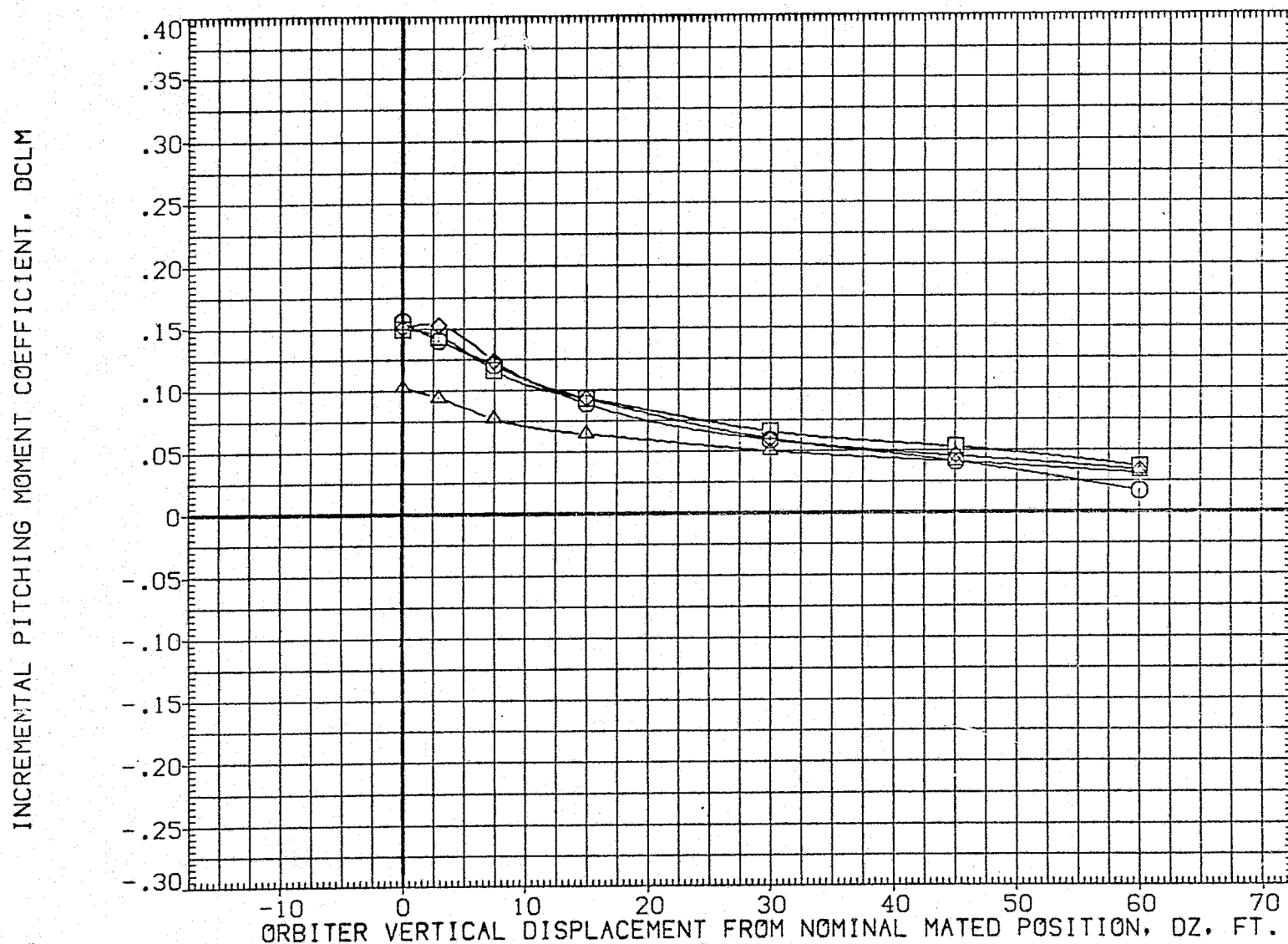


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION	
(KGN052)	CA20 (747/1 01 S1) - (747/1)	.000	4.000	.000	.000	SREF	5500.0000 SQ.FT.
(KGN143)	CA20 (747/1 01 S1) - (747/1)	15.000	4.000	.000	.000	LREF	327.7800 IN.
(KGN129)	CA20 (747/1 02 S1) - (747/1)	.000	4.000	.000	.000	BREF	2348.0400 IN.
(KGN144)	DATA NOT AVAILABLE	15.000	4.000	.000	.000	XMRP	1339.9000 IN.XC
						YMRP	.0000 IN.YC
						ZMRP	190.8000 IN.ZC
						SCALE	.0300

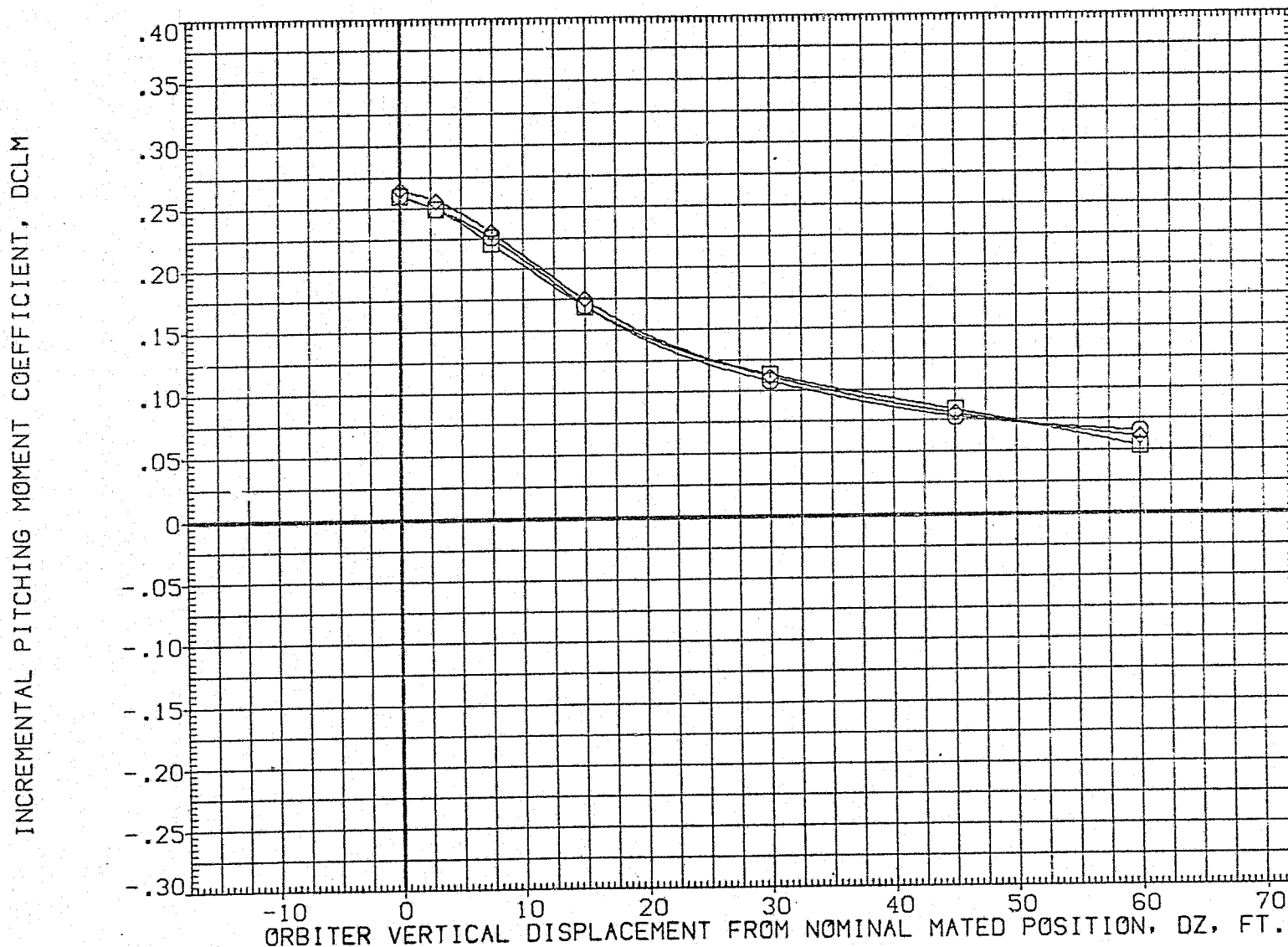


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (KGN052) CA20 (747/1 01 S1) - (747/1)
 (KGN143) DATA NOT AVAILABLE
 (KGN129) DATA NOT AVAILABLE
 (KGN144) DATA NOT AVAILABLE

D/S (052 - 035)

RUDDER	ALPHAC	DX
.000	4.000	.000
15.000	4.000	.000
.000	4.000	.000
15.000	4.000	.000

BETAC	REFERENCE INFORMATION
.000	SREF 5500.0000 SQ.FT.
.000	LREF 327.7800 IN.
.000	BREF 2348.0400 IN.
.000	XMRP 1339.9000 IN.XC
.000	YMRP .0000 IN.YC
.000	ZMRP 190.8000 IN.ZC
.000	SCALE .0300

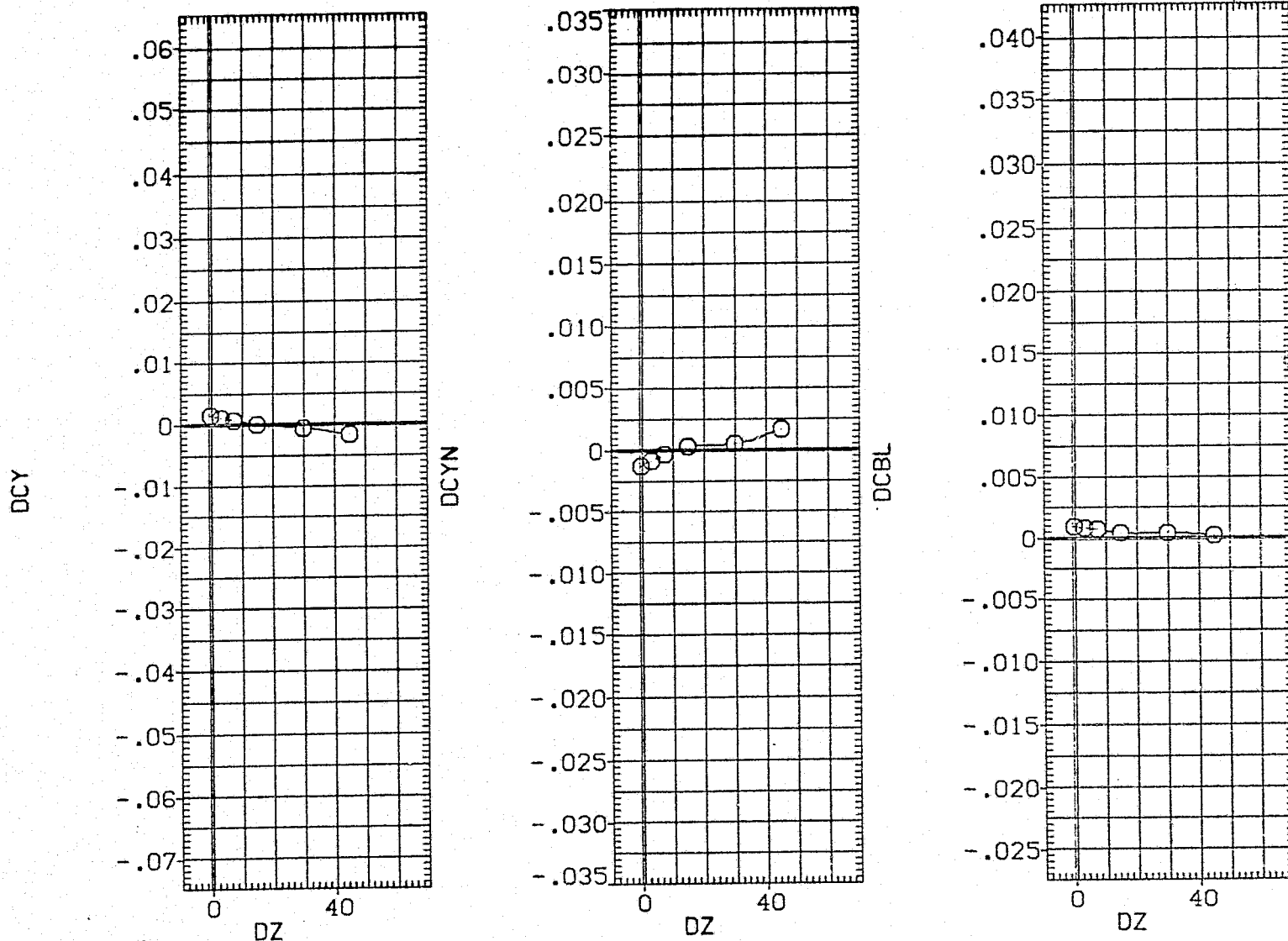


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0 = 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(KGN052)	CA20 (747/1 01 S1) - (747/1)
(KGN143)	CA20 (747/1 01 S1) - (747/1)
(KGN129)	CA20 (747/1 02 S1) - (747/1)
(KGN144)	CA20 (747/1 02 S1) - (747/1)

	RUDDER	ALPHAC	DX
D/S (052 - 035)	.000	4.000	.000
D/S (143 - 035)	15.000	4.000	.000
D/S (129 - 035)	.000	4.000	.000
D/S (144 - 035)	15.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XM RP	1339.9000	IN.XC
YM RP	.0000	IN.YC
ZM RP	190.8000	IN.ZC
SCALE	.0300	

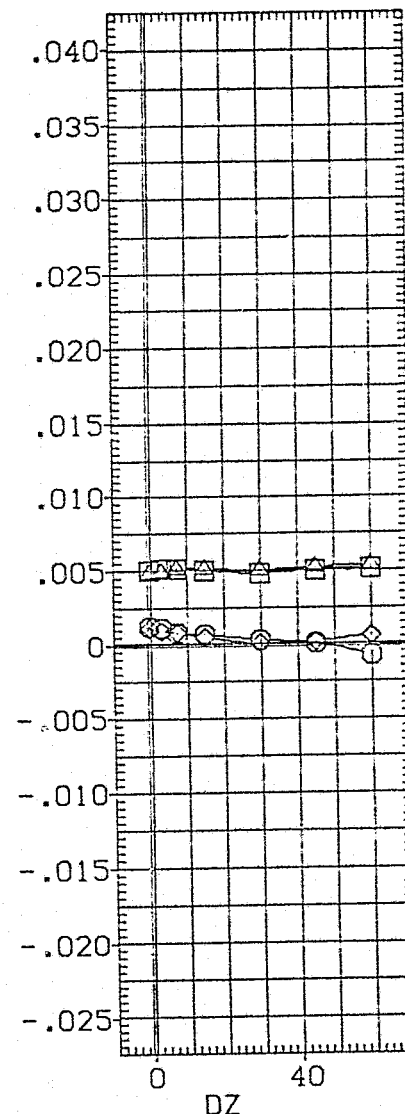
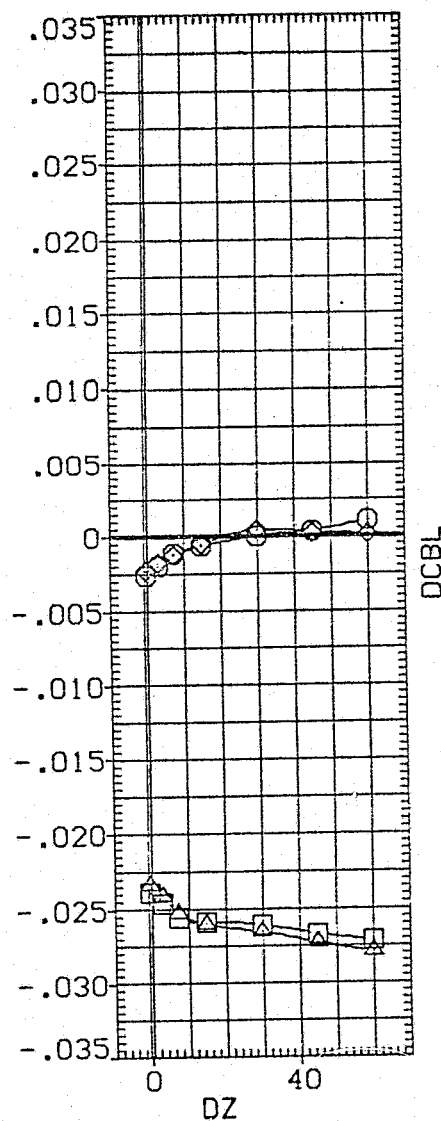
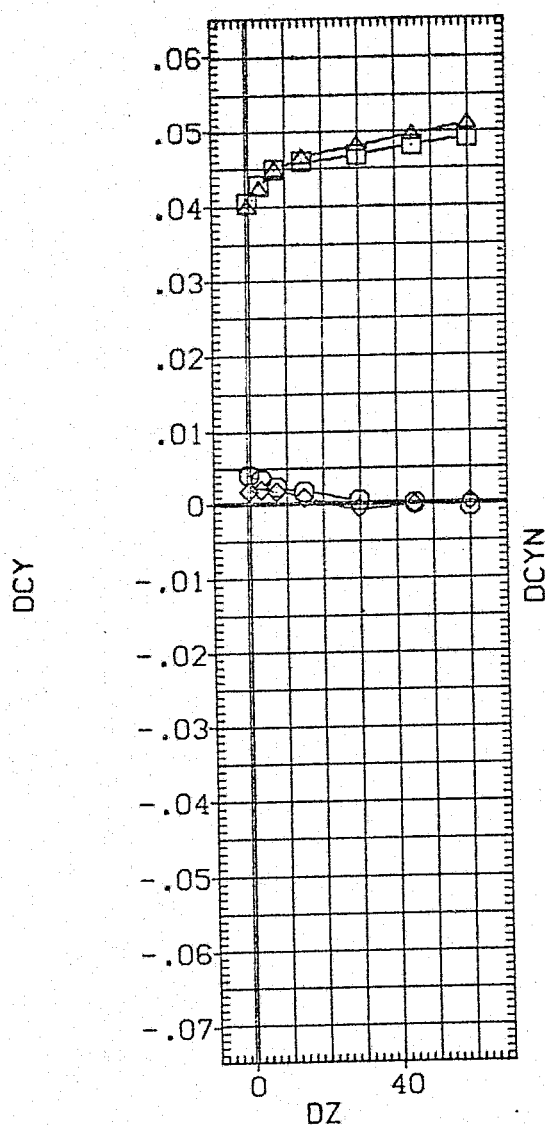


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(KGN052)	CA20 (747/1 01 S1) - (747/1)
(KGN143)	CA20 (747/1 01 S1) - (747/1)
(KGN129)	CA20 (747/1 02 S1) - (747/1)
(KGN144)	DATA NOT AVAILABLE

D/S	(052 - 035)
D/S (143 - 035)	15.000
D/S (129 - 035)	15.000

RUDDER	ALPHAC
.000	4.000
15.000	4.000
.000	4.000
15.000	4.000

OX	BETAC
.000	.000
.000	.000
.000	.000
.000	.000

REFERENCE INFORMATION			
SREF	5500.0000	50.FT.	
LREF	327.7800	IN.	
BREF	2348.0400	IN.	
XMRP	1339.9000	IN.XC	
YMRP	.0000	IN.YC	
ZMRP	190.8000	IN.ZC	
SCALE	.0300		

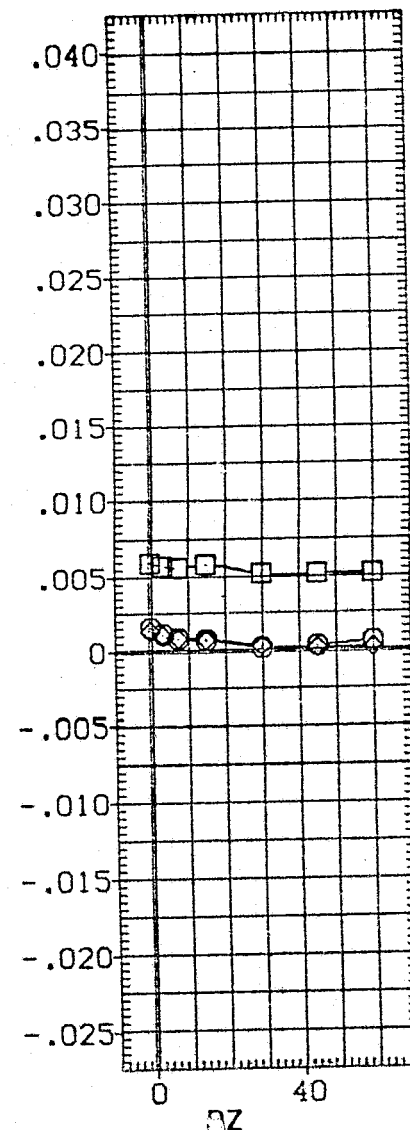
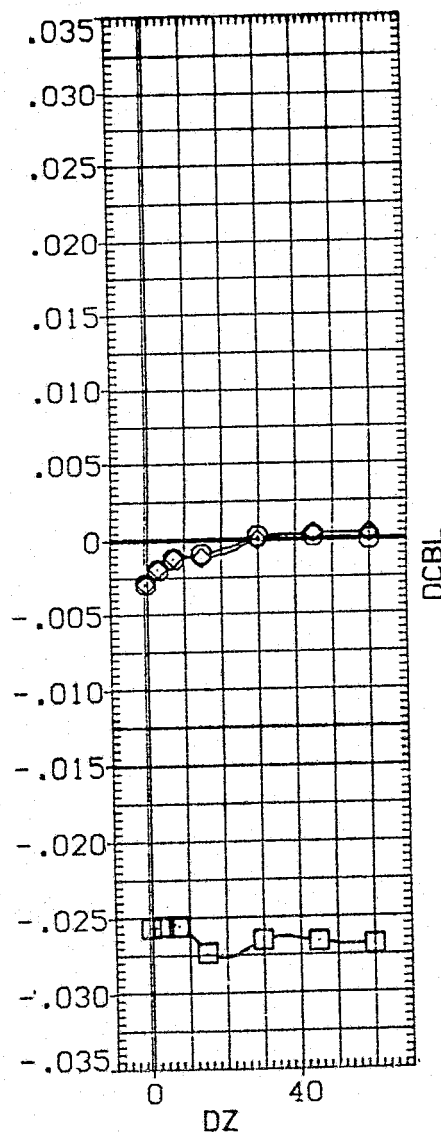
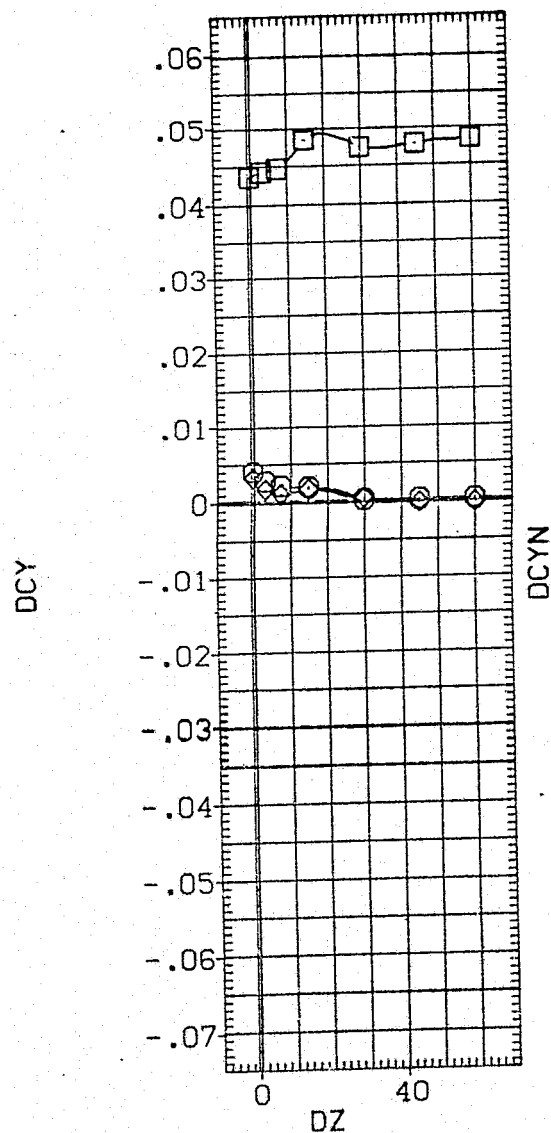


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S (052 - 035)	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
(KGN052)	CA20 (747/1 01 S1) - (747/1)		.000	4.000	.000	.000	SREF 5500.0000 SQ.FT.
(KGN143)	DATA NOT AVAILABLE		15.000	4.000	.000	.000	LREF 327.7800 IN.
(KGN129)	DATA NOT AVAILABLE		.000	4.000	.000	.000	BREF 2348.0400 IN.
(KGN144)	DATA NOT AVAILABLE		15.000	4.000	.000	.000	XMRP 1339.9000 IN.XC
							YMRP .0000 IN.YC
							ZMRP 190.8000 IN.ZC
							SCALE .0300

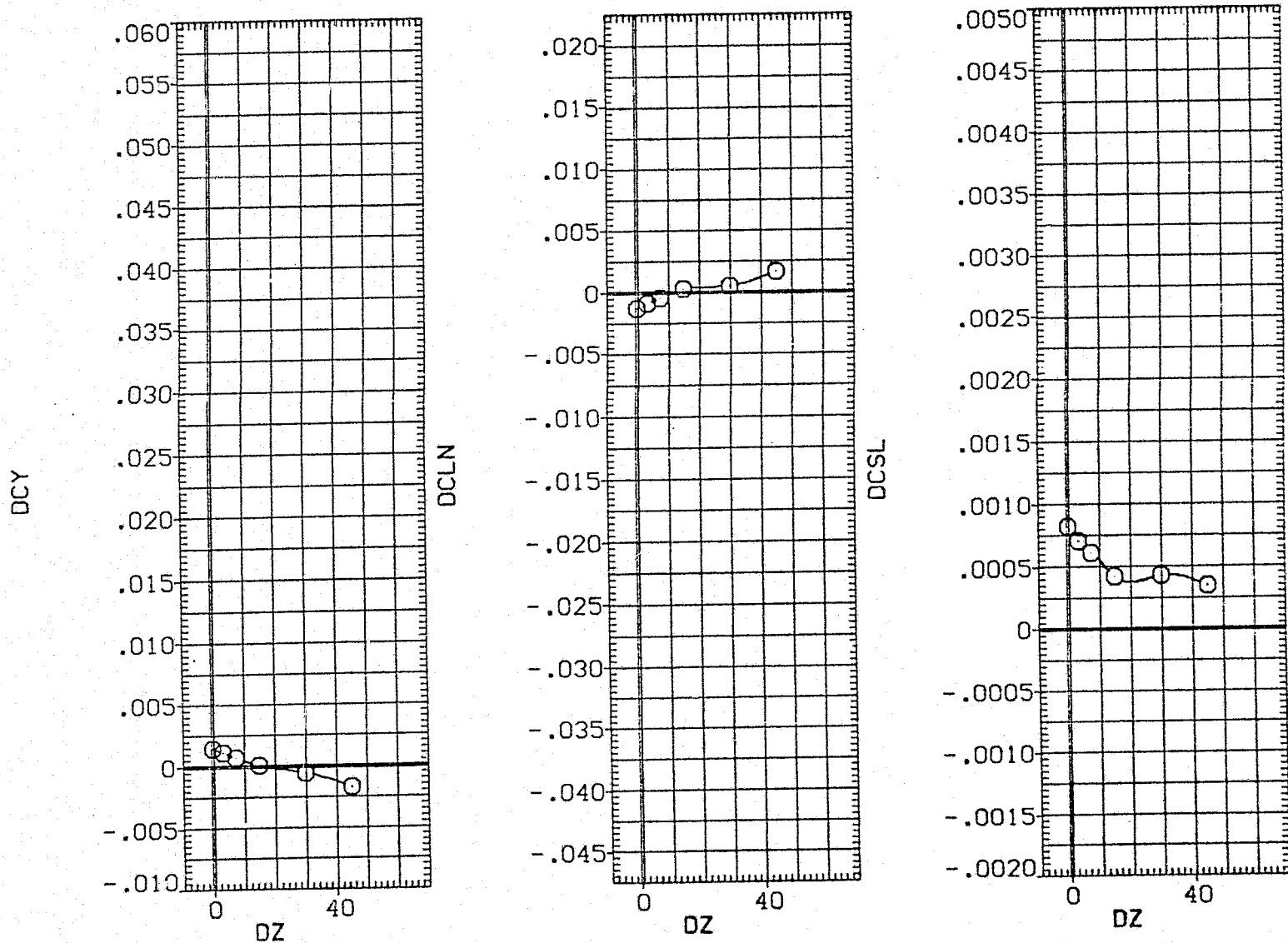


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 CA)ALPHA0= 6.00

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(KGN052)	○	CA20	(747/1 01 S1) - (747/1)
(KGN143)	□	CA20	(747/1 01 S1) - (747/1)
(KGN129)	◇	CA20	(747/1 02 S1) - (747/1)
(KGN144)	△	CA20	(747/1 02 S1) - (747/1)

D/S	RUDDER	ALPHA C	DX	BETAC
(052 - 035)	.000	4.000	.000	.000
(143 - 035)	15.000	4.000	.000	.000
(129 - 035)	.000	4.000	.000	.000
(144 - 035)	15.000	4.000	.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

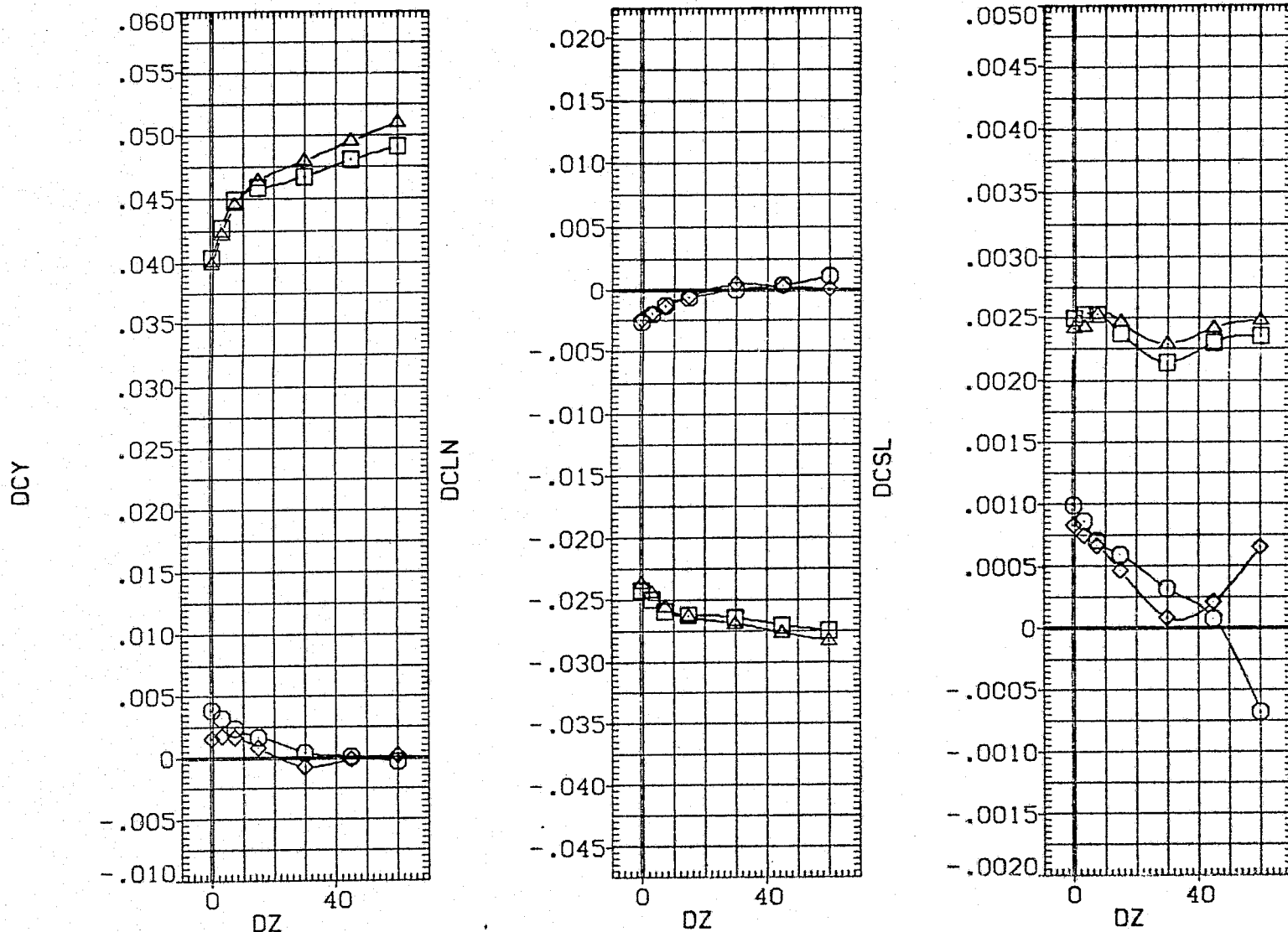


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(KGN052)	CA20 (747/1 01 S1) - (747/1)
(KGN143)	CA20 (747/1 01 S1) - (747/1)
(KGN129)	CA20 (747/1 02 S1) - (747/1)
(KGN144)	DATA NOT AVAILABLE

D/S	RUDDER	ALPHAC
(052 - 035)	.000	4.000
(143 - 035)	15.000	4.000
(129 - 035)	.000	4.000
	15.000	4.000

DX	BETAC
.000	.000
.000	.000
.000	.000
.000	.000
.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
YMRP	1339.9000	IN.XC
ZMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

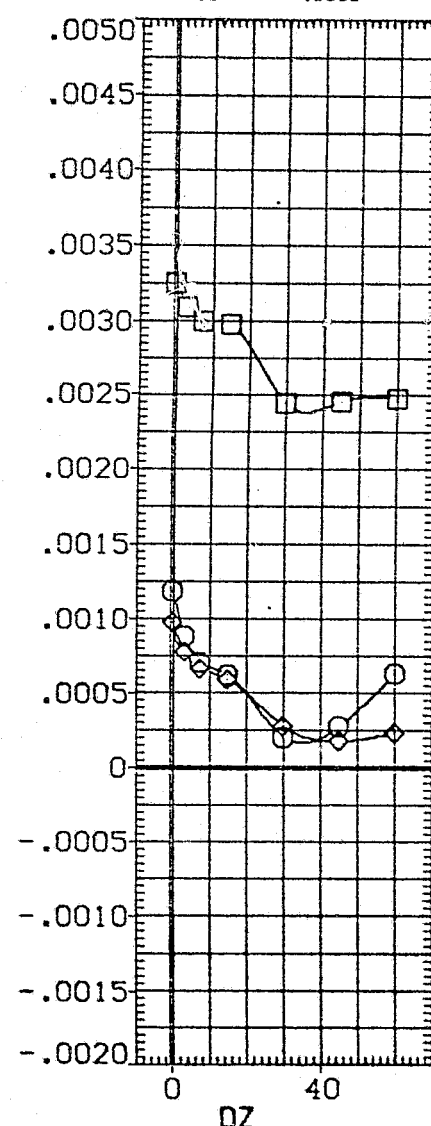
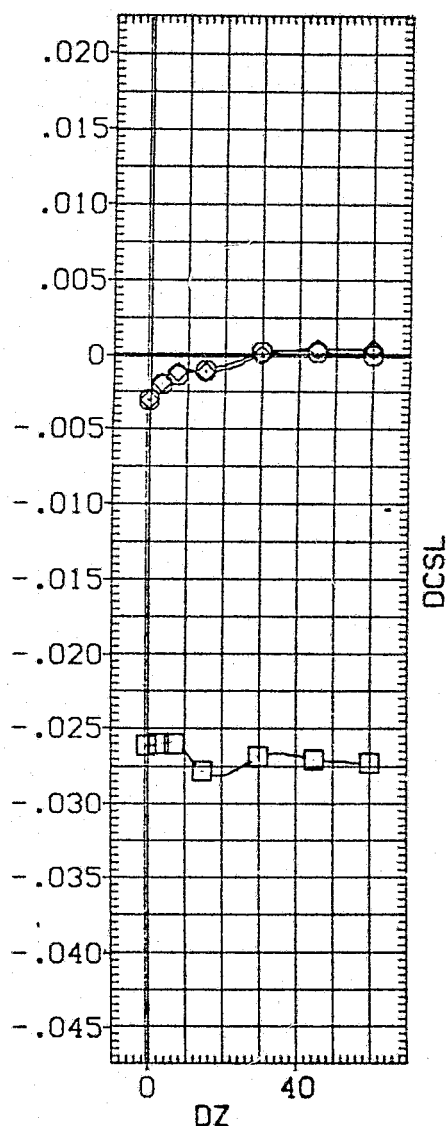
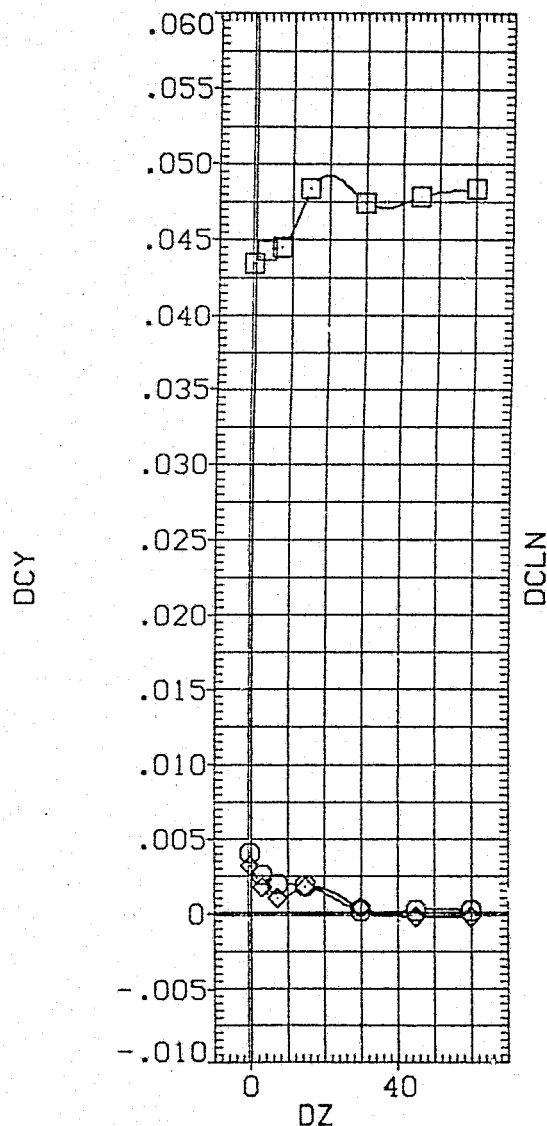


FIG 34 RUDDER EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
(C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (JGN052) □ CA20 747/1 01 S1
 (JGN143) □ DATA NOT AVAILABLE
 (JGN129) X DATA NOT AVAILABLE
 (JGN144) X DATA NOT AVAILABLE

ORBITER DATA

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	2690.0000	50.FT.
15.000	4.000	.000	.000	LREF	474.8100	IN.
.000	4.000	.000	.000	BREF	936.6800	IN.
15.000	4.000	.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

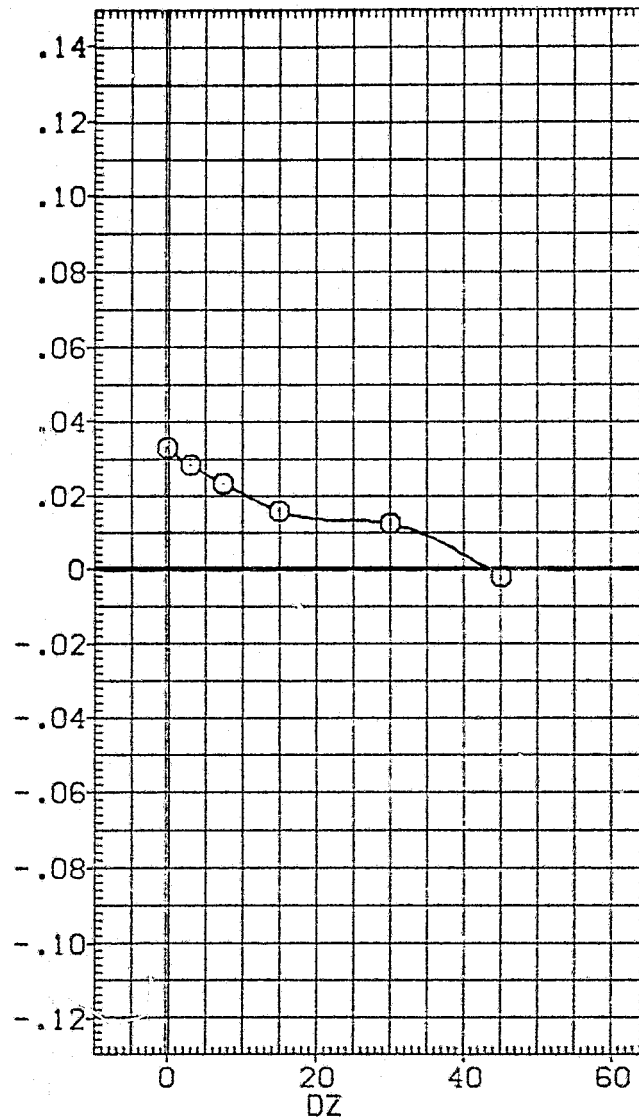
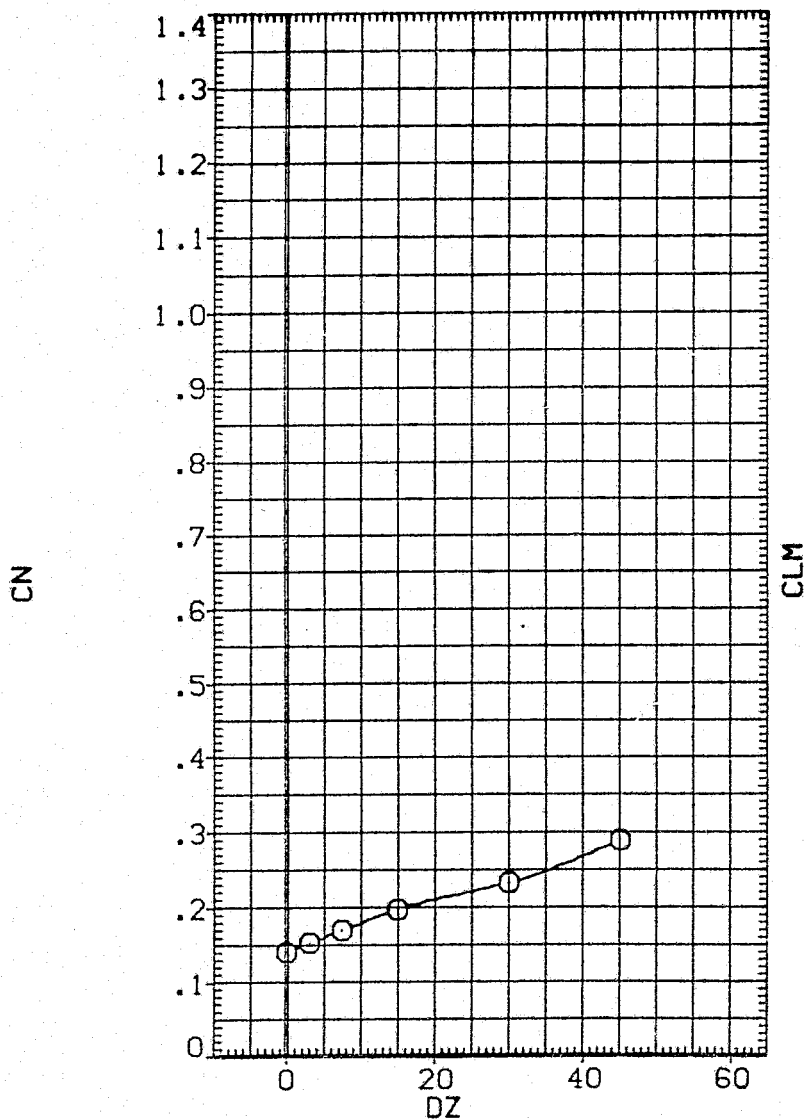


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	CA20 747/1 01 S1
(JGN129)	CA20 747/1 02 S1
(JGN144)	CA20 747/1 02 S1

ORBITER DATA
ORBITER DATA
ORBITER DATA
ORBITER DATA

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
.000	4.000	.000	.000	SKEF 2690.0000 SO.FT.
15.000	4.000	.000	.000	LREF 474.8100 IN.
.000	4.000	.000	.000	BREF 936.6900 IN.
15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
				YMRP .0000 IN.Y0
				ZMRP 375.0000 IN.Z0
				SCALE .0300

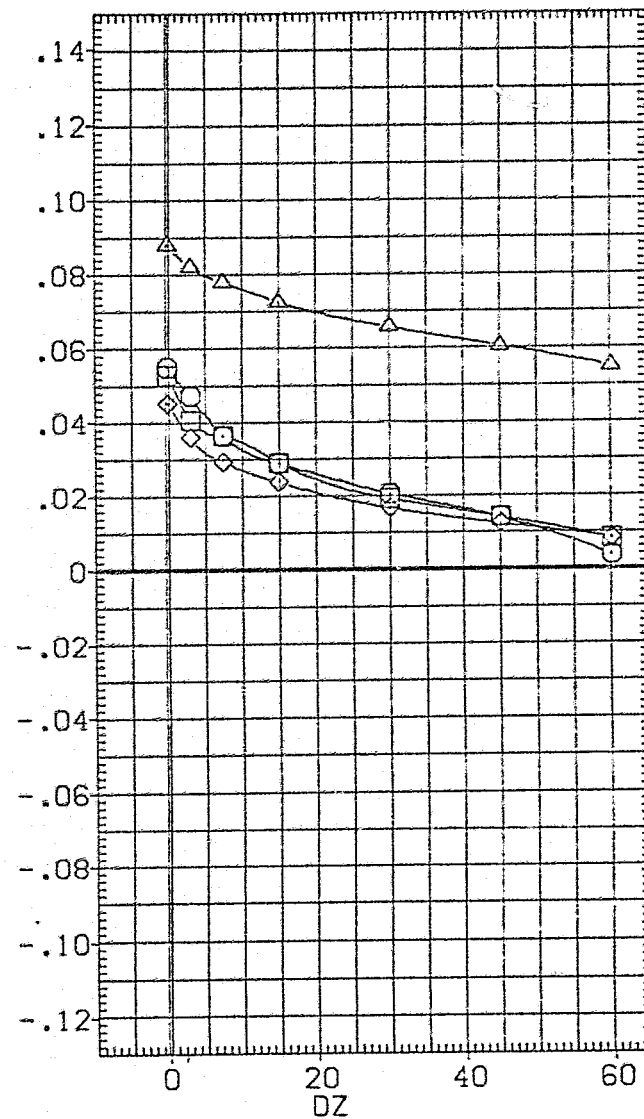
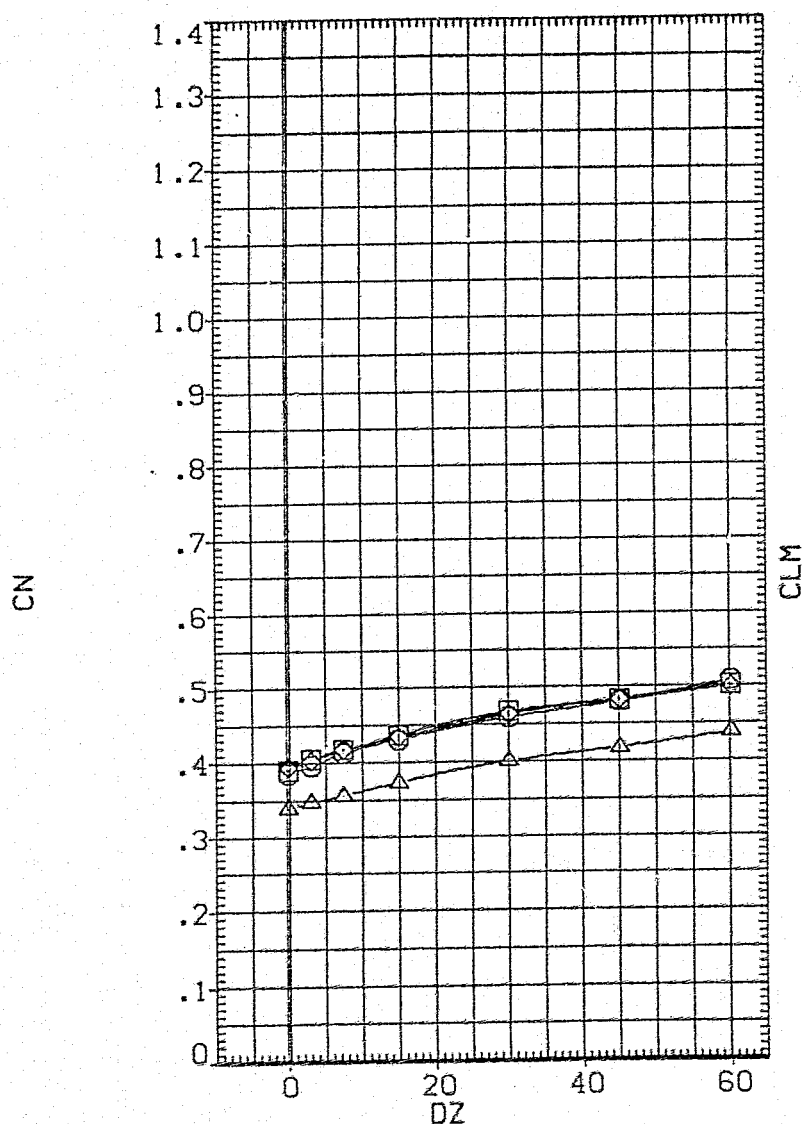


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	CA20 747/1 01 S1
(JGN129)	CA20 747/1 02 S1
(JGN144)	DATA NOT AVAILABLE

ORBITER DATA
ORBITER DATA
ORBITER DATA

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	2690.0000	SQ.FT.
15.000	4.000	.000	.000	LREF	474.8100	IN.
.000	4.000	.000	.000	BREF	936.6800	IN.
15.000	4.000	.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

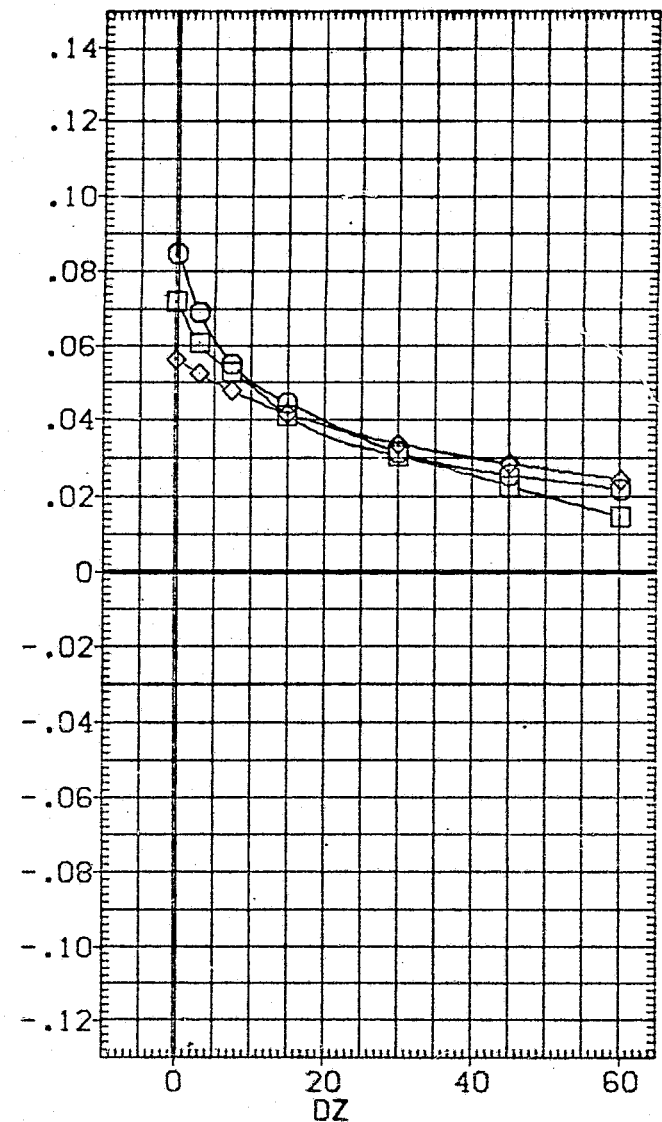
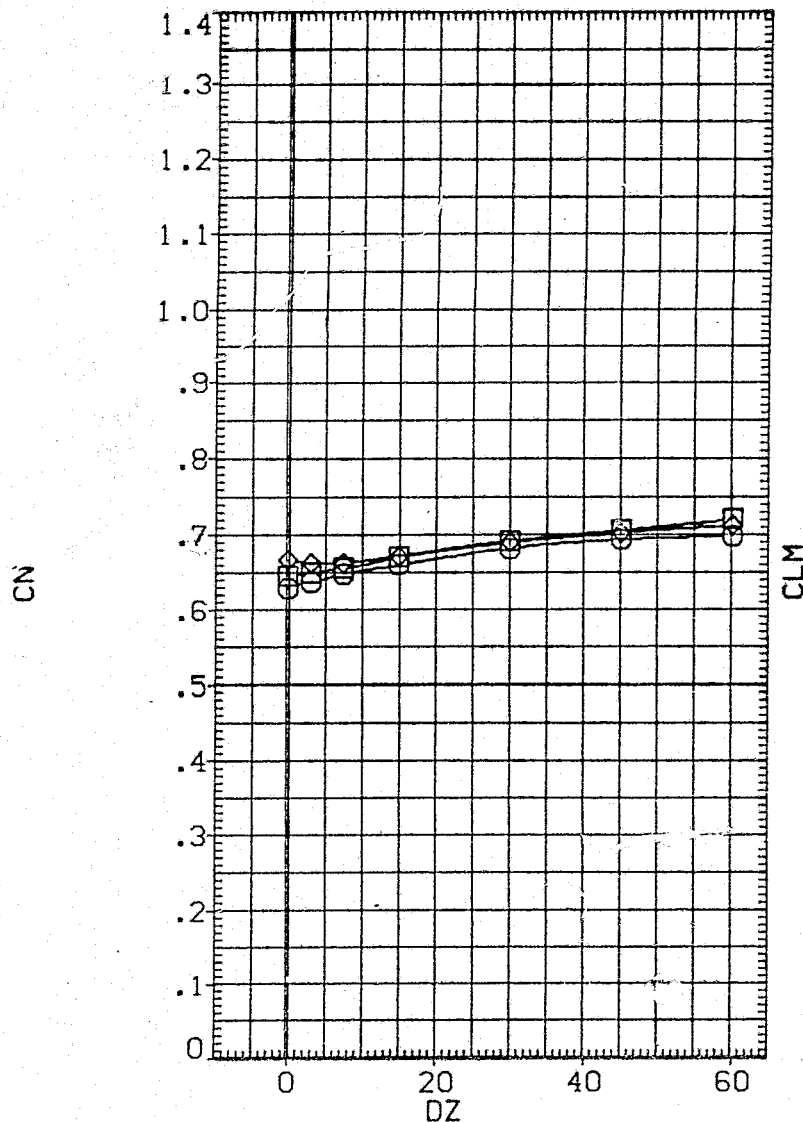


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	DATA NOT AVAILABLE
(JGN129)	DATA NOT AVAILABLE
(JGN144)	DATA NOT AVAILABLE

ORBITER DATA	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
	.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
	15.000	4.000	.000	.000	LREF 474.8100 IN.
	.000	4.000	.000	.000	BREF 936.6800 IN.
	15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
					YMRP .0000 IN.Y0
					ZMRP 375.0000 IN.Z0
					SCALE .0300

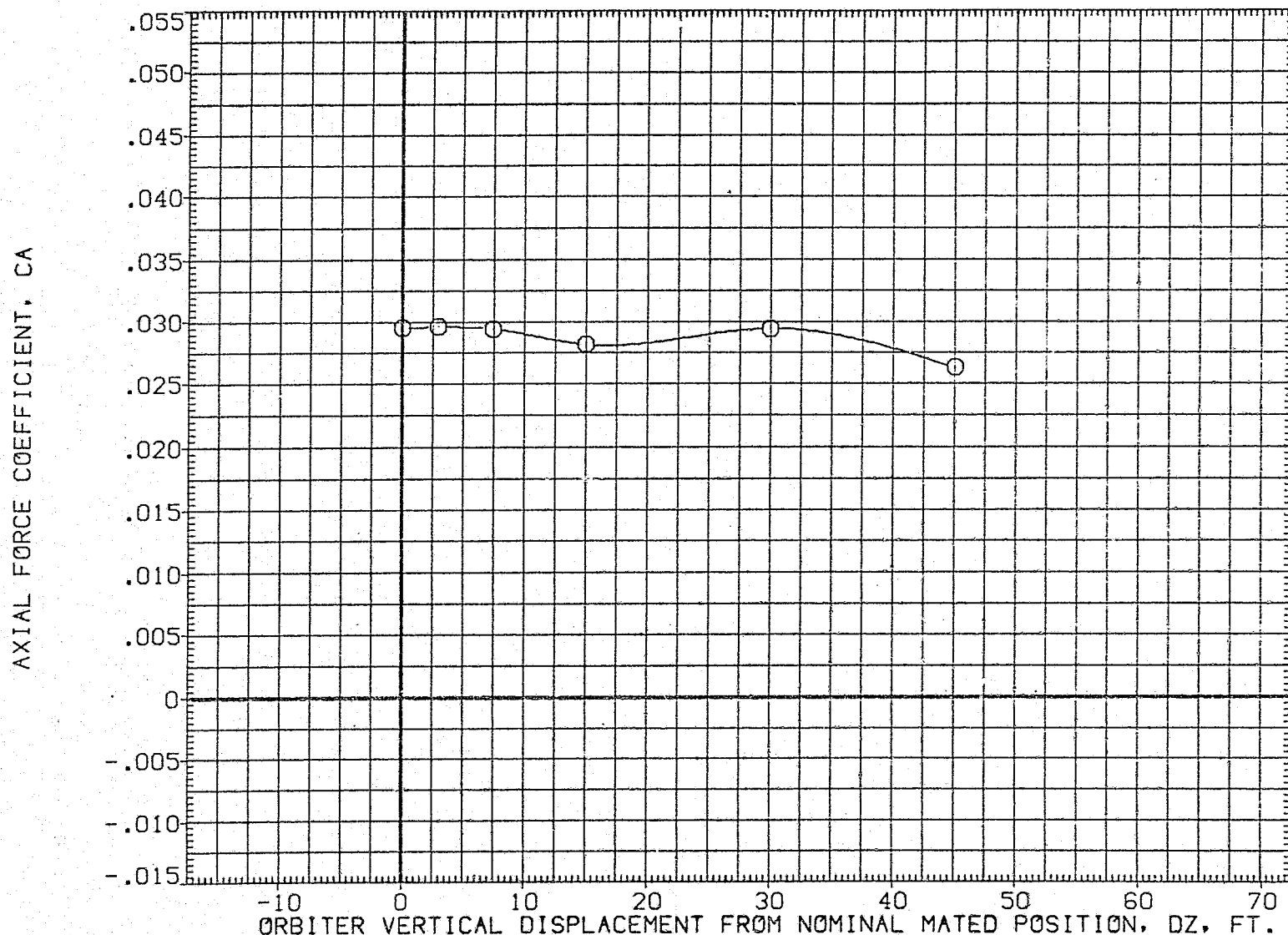


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A)ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	CA20 747/1 01 S1
(JGN129)	CA20 747/1 02 S1
(JGN144)	CA20 747/1 02 S1

	RUDDER	ALPHA/C	DX	BETAC	REFERENCE INFORMATION
ORBITER DATA	.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
ORBITER DATA	15.000	4.000	.000	.000	LREF 474.8100 IN.
ORBITER DATA	.000	4.000	.000	.000	BREF 936.6900 IN.
ORBITER DATA	15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
					YMRP .0000 IN.Y0
					ZMRP 375.0000 IN.Z0
					SCALE .0300

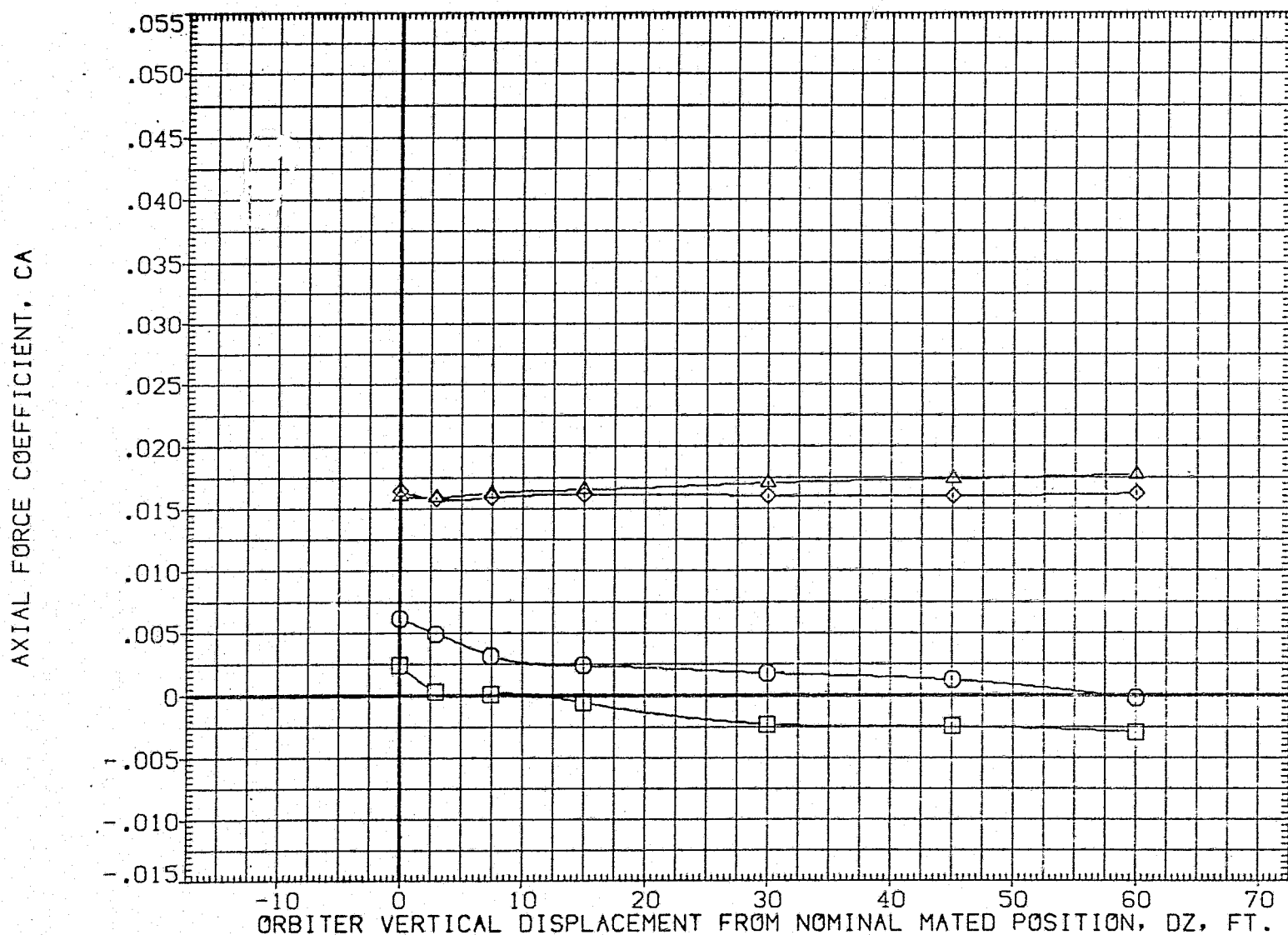


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	CA20 747/1 01 S1
(JGN129)	CA20 747/1 02 S1
(JGN144)	DATA NOT AVAILABLE

	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION	
ORBITER DATA	.000	4.000	.000	.000	SREF	2690.0000 SQ.FT.
ORBITER DATA	15.000	4.000	.000	.000	LREF	474.8100 IN.
ORBITER DATA	.000	4.000	.000	.000	BREF	906.6800 IN.
	15.000	4.000	.000	.000	XMRP	1109.0000 IN.XG
					YMRP	.0000 IN.YG
					ZMRP	375.0000 IN.ZG
					SCALE	.0300

AXIAL FORCE COEFFICIENT, CA

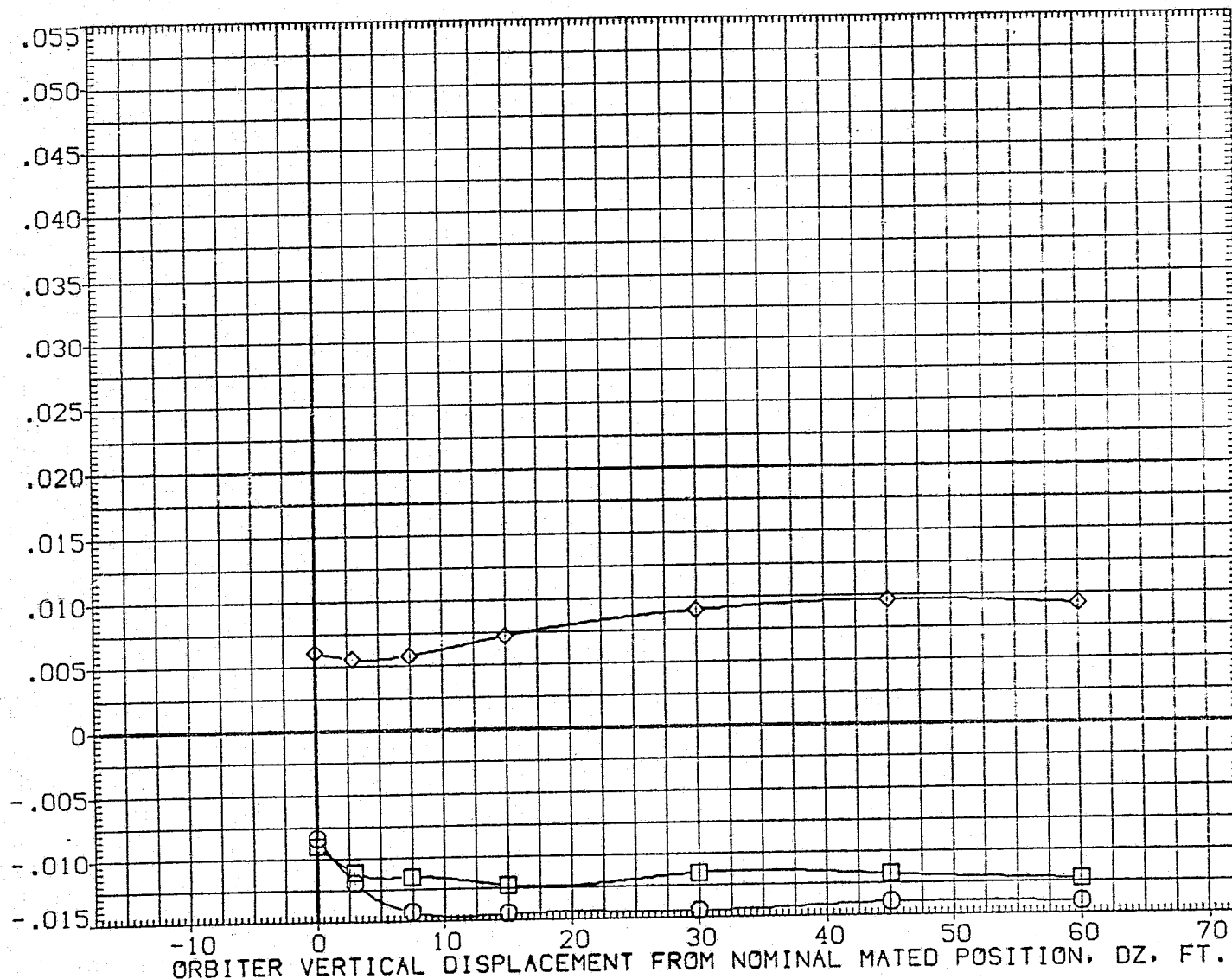


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00 PAGE 1659

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	DATA NOT AVAILABLE
(JGN129)	DATA NOT AVAILABLE
(JGN144)	DATA NOT AVAILABLE

ORBITER DATA

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	2690.0000	50.FT.
15.000	4.000	.000	.000	LREF	474.8100	IN.
.000	4.000	.000	.000	BREF	936.6800	IN.
15.000	4.000	.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

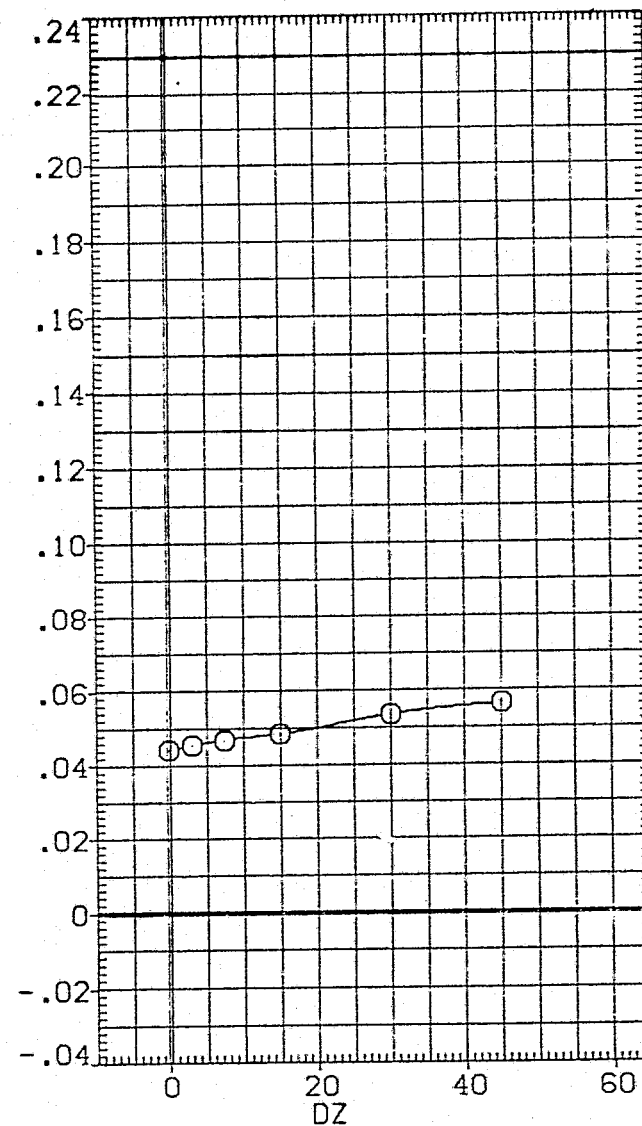
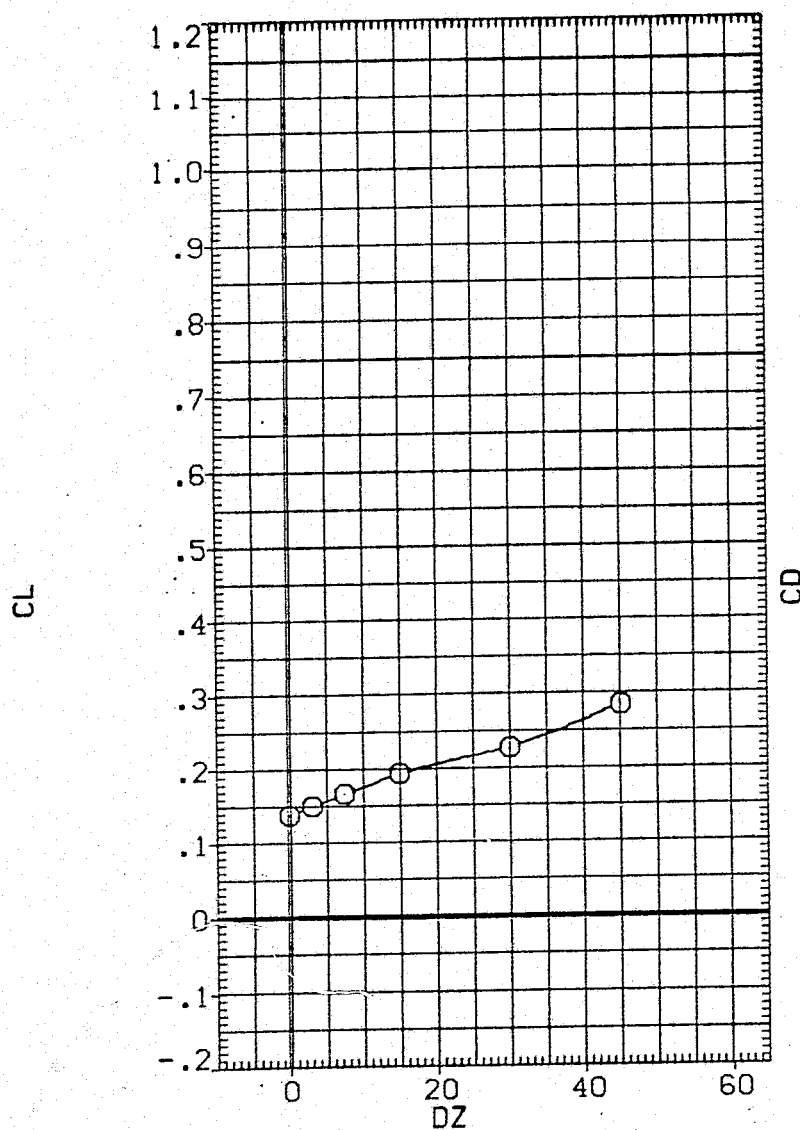


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	CA20 747/1 01 S1
(JGN129)	CA20 747/1 02 S1
(JGN144)	CA20 747/1 02 S1

ORBITER DATA
ORBITER DATA
ORBITER DATA
ORBITER DATA

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
15.000	4.000	.000	.000	LREF 474.8100 IN.
.000	4.000	.000	.000	BREF 936.6800 IN.
15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
				YMRP .0000 IN.Y0
				ZMRP 375.0000 IN.Z0
				SCALE .0300

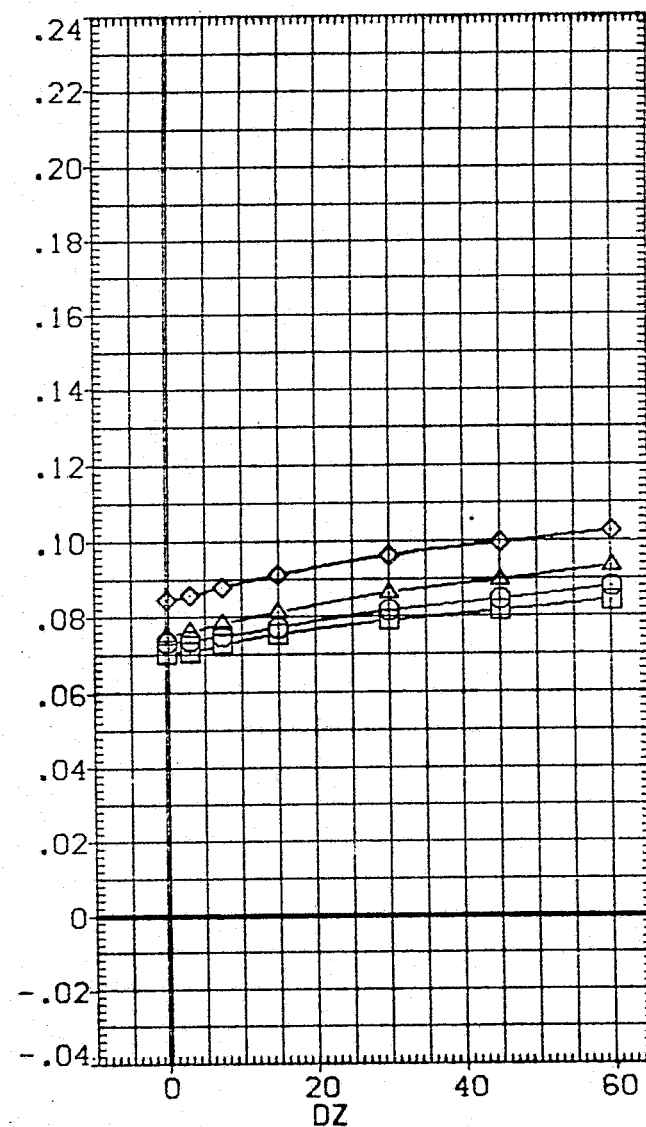
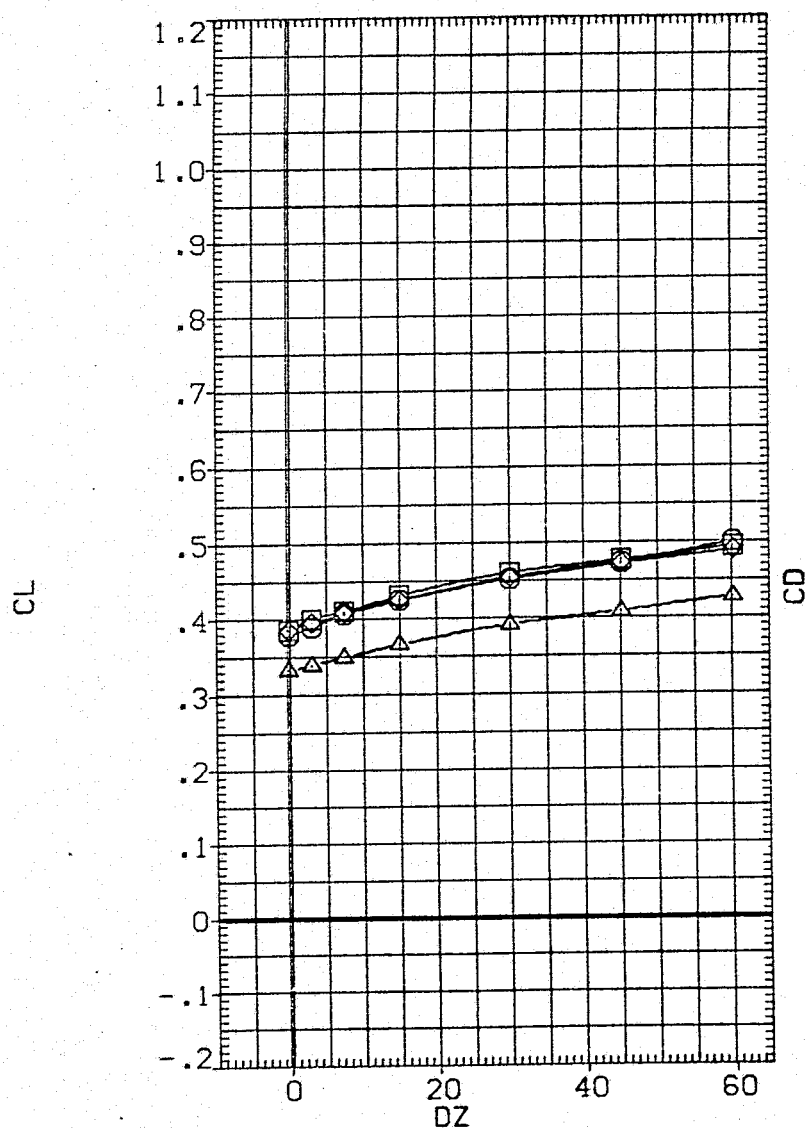


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	CA20 747/1 01 S1
(JGN129)	CA20 747/1 02 S1
(JGN144)	DATA NOT AVAILABLE

ORBITER DATA
ORBITER DATA
ORBITER DATA

RUDDER	ALPHAC	DX	BETAC
.000	4.000	.000	.000
15.000	4.000	.000	.000
.000	4.000	.000	.000
15.000	4.000	.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

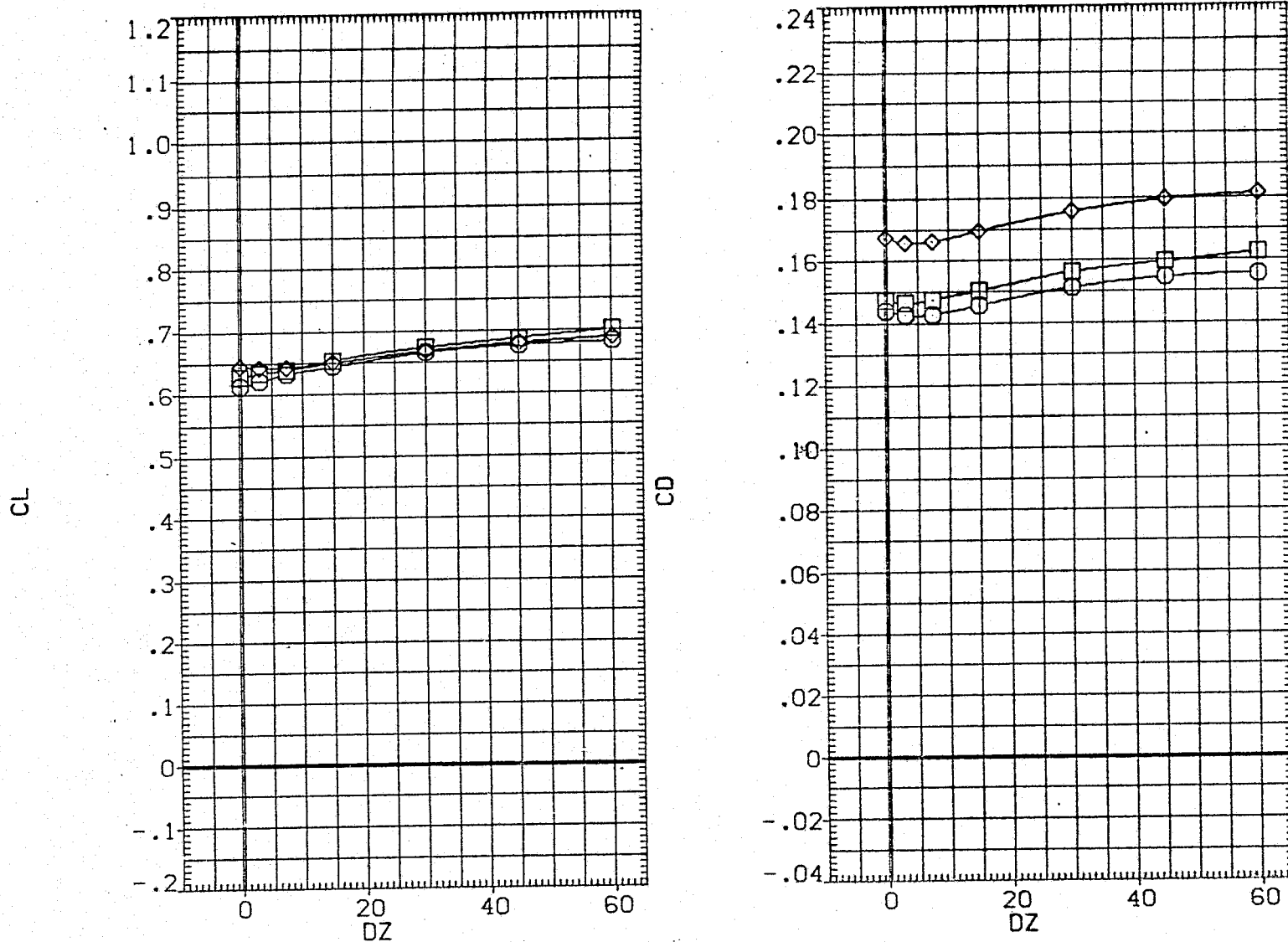


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	DATA NOT AVAILABLE
(JGN129)	DATA NOT AVAILABLE
(JGN144)	DATA NOT AVAILABLE

ORBITER DATA	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
	.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
	15.000	4.000	.000	.000	LREF 474.8100 IN.
	.000	4.000	.000	.000	BREF 936.6800 IN.
	15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
					YMRP .0000 IN.Y0
					ZMRP 375.0000 IN.Z0
					SCALE .0300

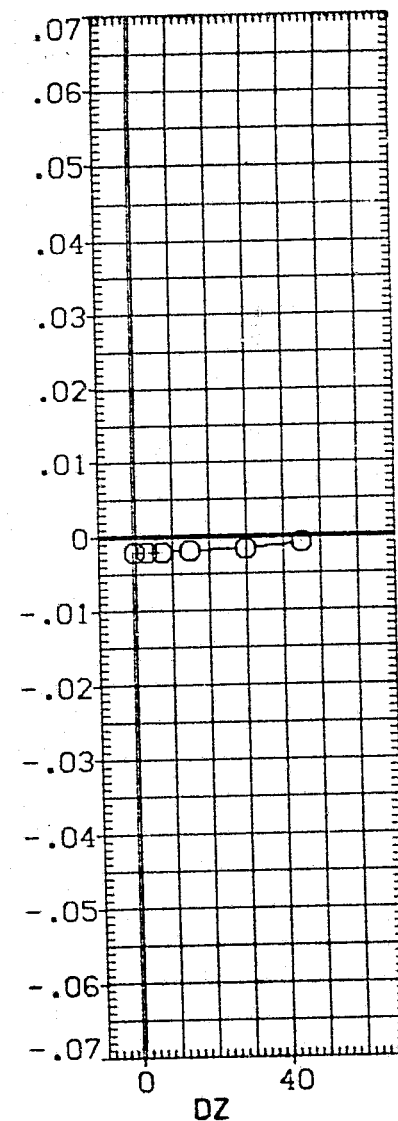
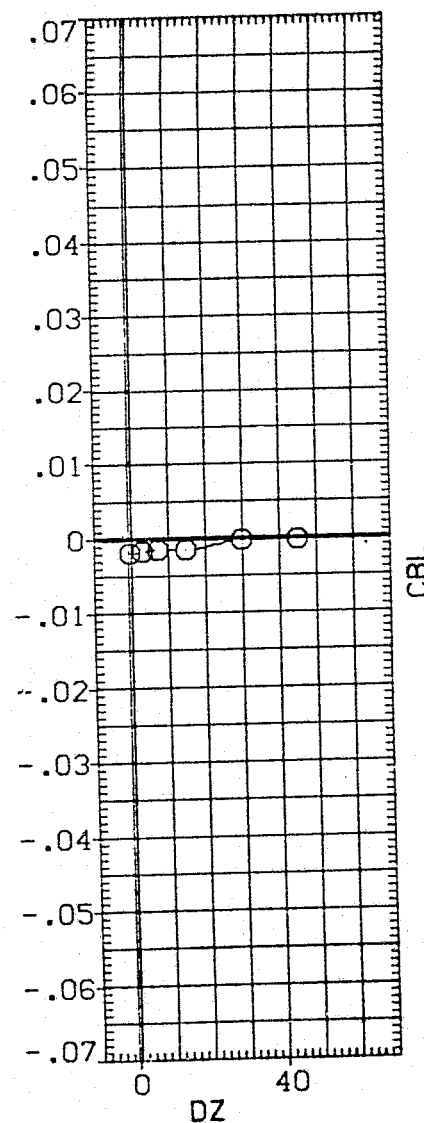
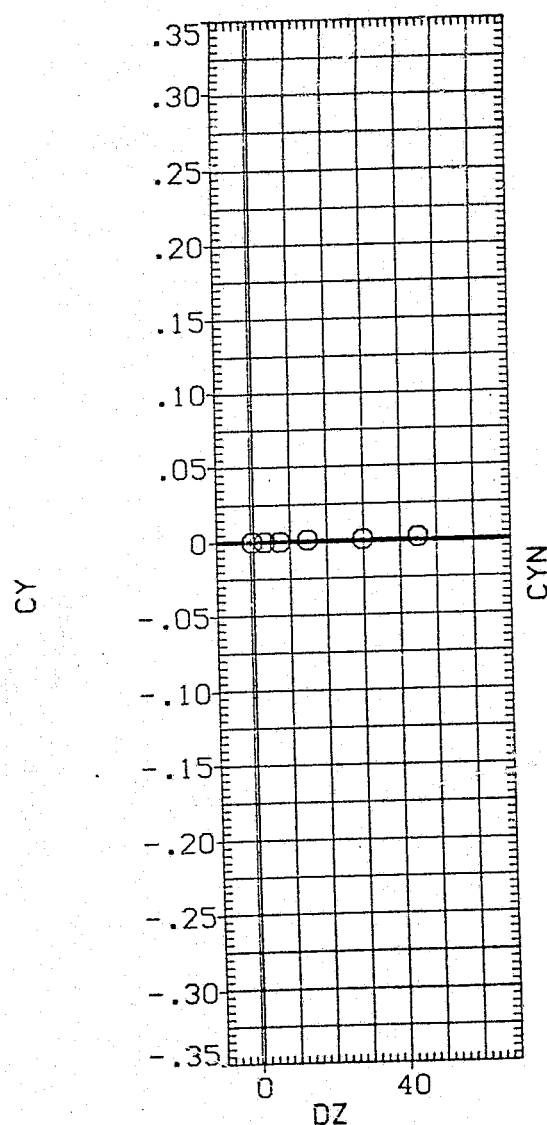


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A)ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	CA20 747/1 01 S1
(JGN129)	CA20 747/1 02 S1
(JGN144)	CA20 747/1 02 S1

	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
ORBITER DATA	.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
ORBITER DATA	15.000	4.000	.000	.000	LREF 474.8100 IN.
ORBITER DATA	.000	4.000	.000	.000	BREF 936.6800 IN.
ORBITER DATA	15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
					YMRP .0000 IN.Y0
					ZMRP 375.0000 IN.Z0
					SCALE .0300

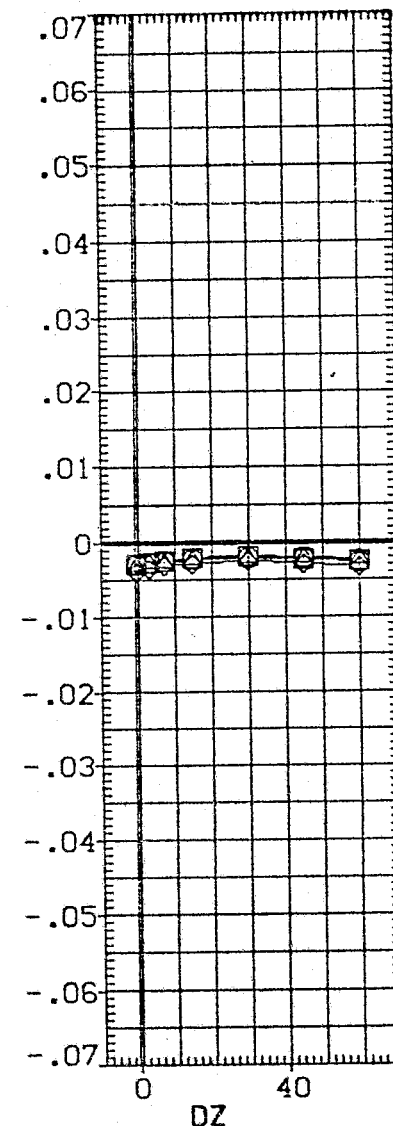
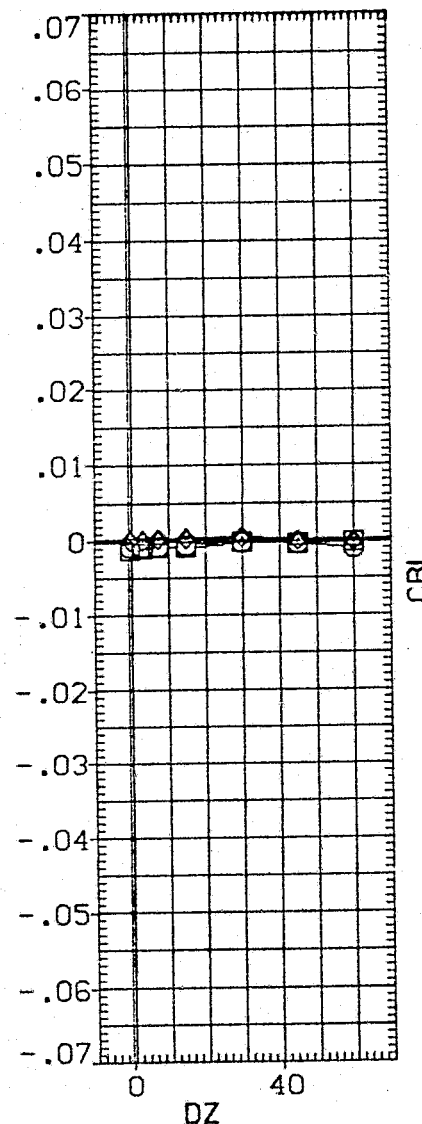
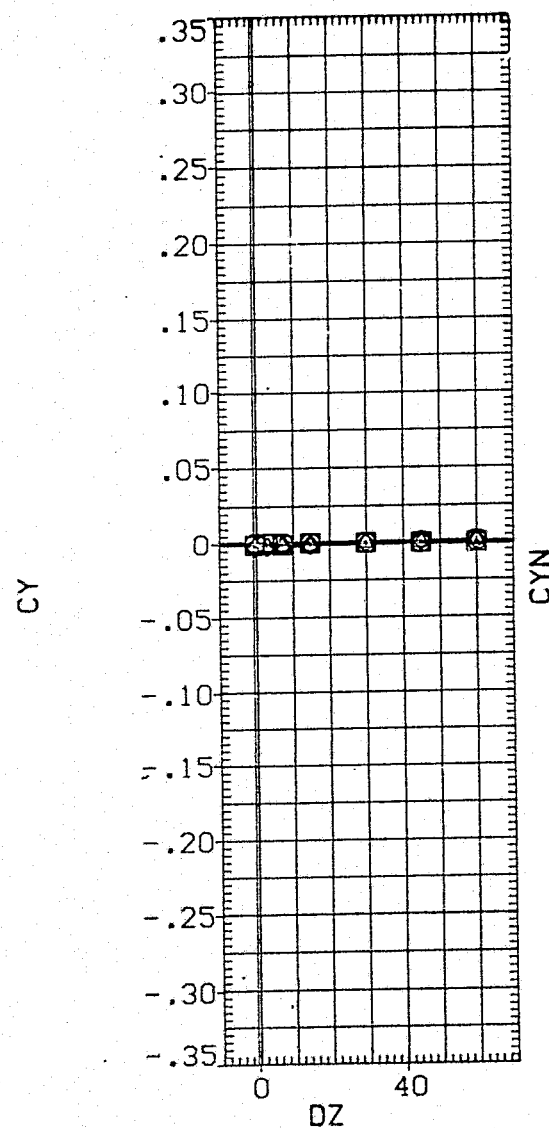


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0 = 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN052)	CA20 747/1 01 S1
(JGN143)	CA20 747/1 01 S1
(JGN129)	CA20 747/1 02 S1
(JGN144)	DATA NOT AVAILABLE

	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
ORBITER DATA	.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
ORBITER DATA	15.000	4.000	.000	.000	LREF 474.8100 IN.
ORBITER DATA	.000	4.000	.000	.000	BREF 936.6800 IN.
	15.000	4.000	.000	.000	XMRF 1109.0000 IN.XC
					YMRF .0000 IN.YC
					ZMRF 375.0000 IN.ZC
					SCALE .0300

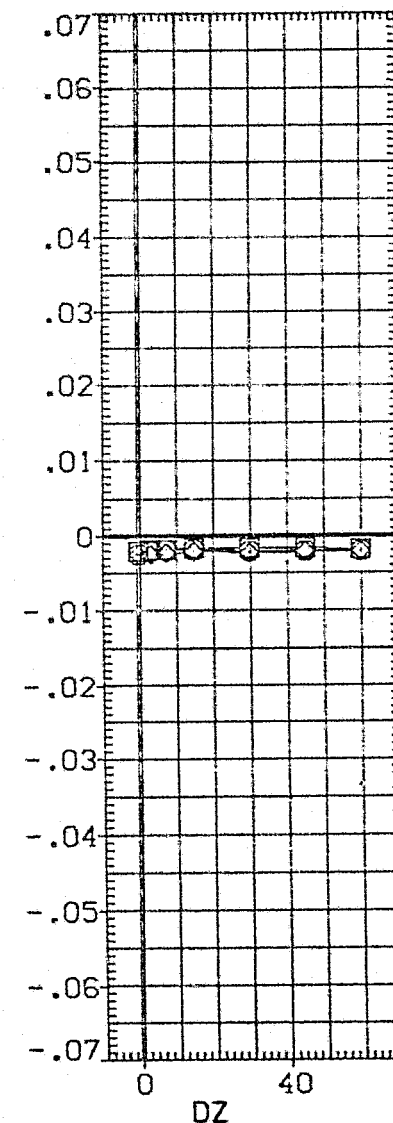
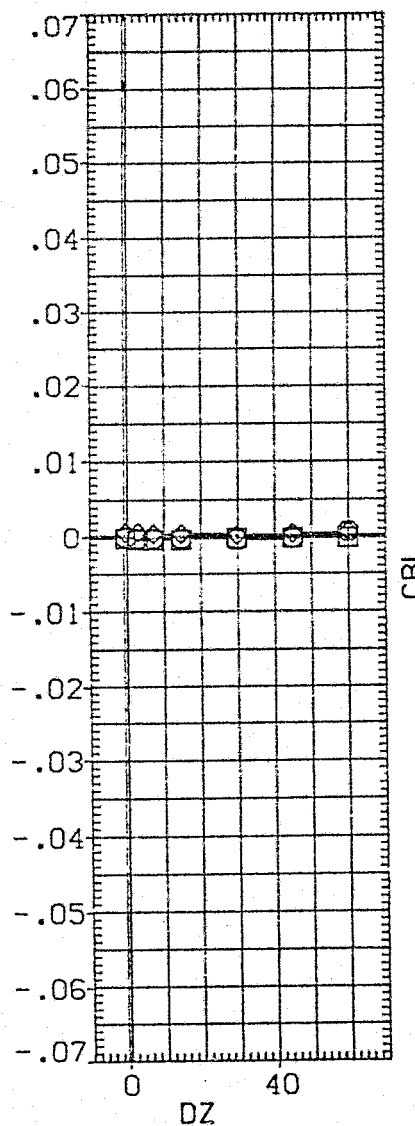
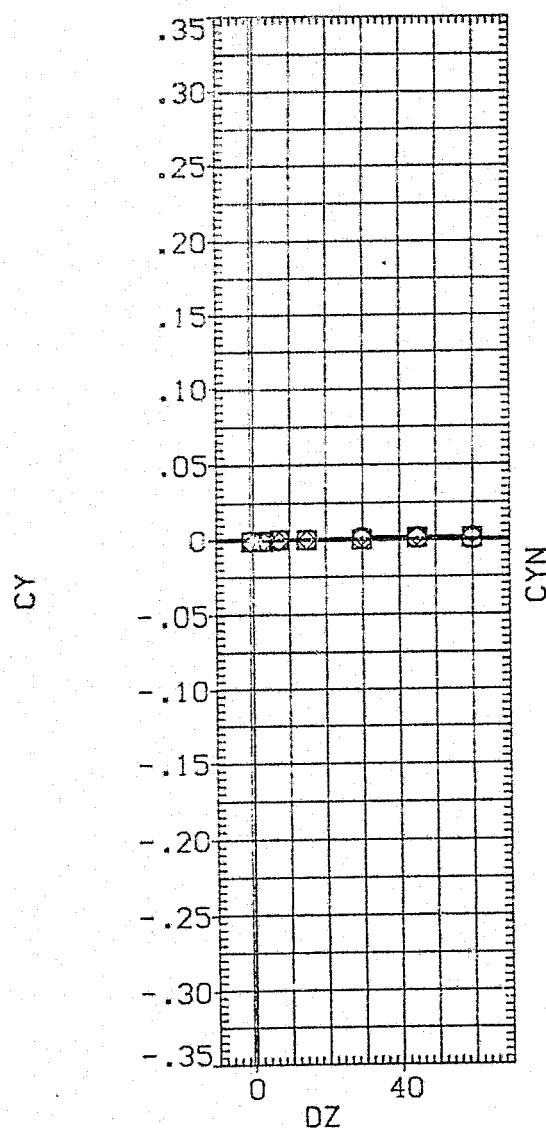


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
{LGN052}	CA20 (747/1 01 S1) - (01 S1) 0/S (052 - 010)
{LGN143}	DATA NOT AVAILABLE
{LGN129}	DATA NOT AVAILABLE
{LGN144}	DATA NOT AVAILABLE

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	2680.0000	50.FT.
15.000	4.000	.000	.000	LREF	474.8100	IN.
.000	4.000	.000	.000	BREF	936.6800	IN.
15.000	4.000	.000	.000	XMRP	1109.0000	IN.XO
				YMRP	.0000	IN.YO
				ZMRP	375.0000	IN.ZO
				SCALE	.0300	

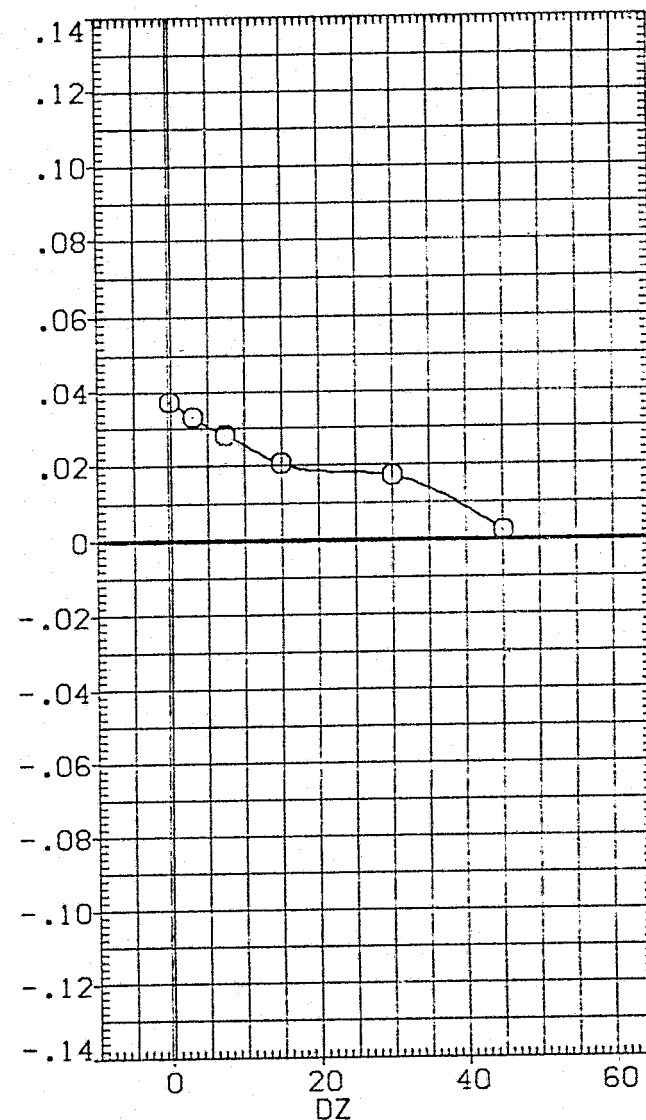
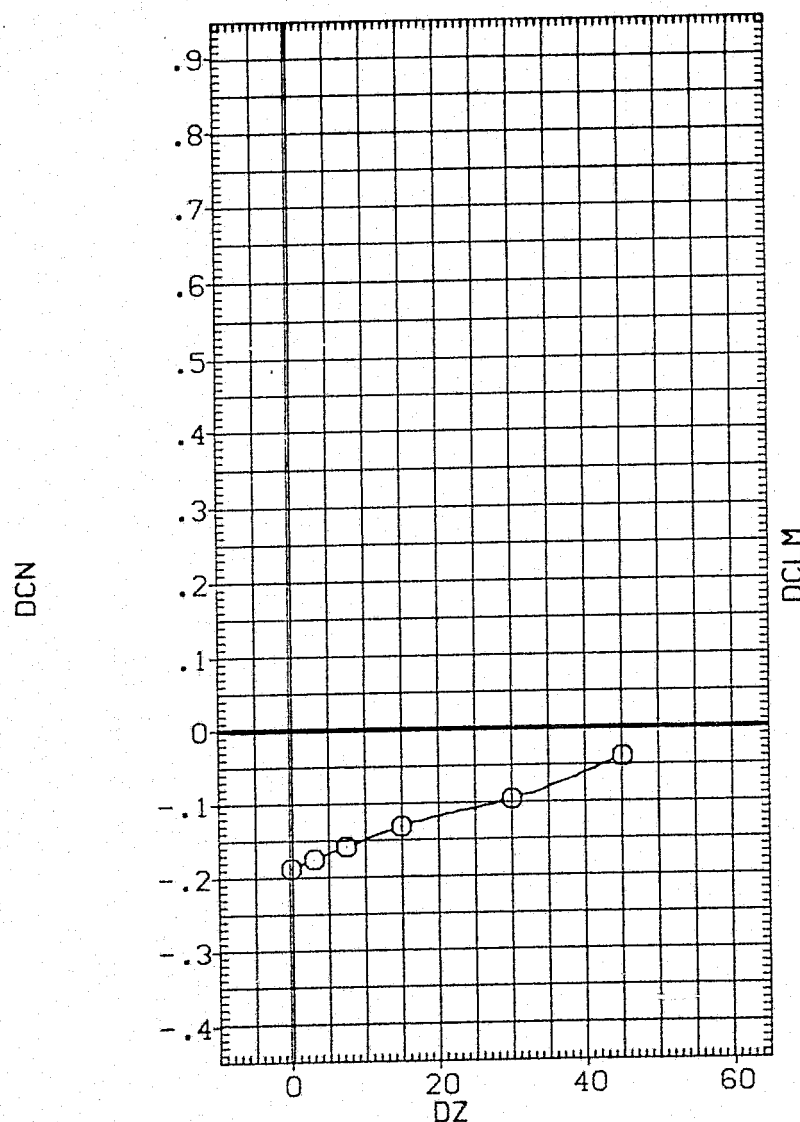


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0 = 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION	
(LGND52)	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)	.000	4.000	.000	.000	SREF	2690.0000 SQ.FT.
(LGN143)	CA20 (747/1 01 S1) - (01 S1)	D/S (143 - 010)	15.000	4.000	.000	.000	LREF	474.8100 IN.
(LGN129)	CA20 (747/1 01 S1) - (01 S1)	D/S (129 - 018)	.000	4.000	.000	.000	SREF	936.6800 IN.
(LGN144)	CA20 (747/1 01 S1) - (01 S1)	D/S (144 - 018)	15.000	4.000	.000	.000	XMRP	1109.0000 IN.X0
							YMRP	.0000 IN.Y0
							ZMRP	375.0000 IN.Z0
							SCALE	.0300

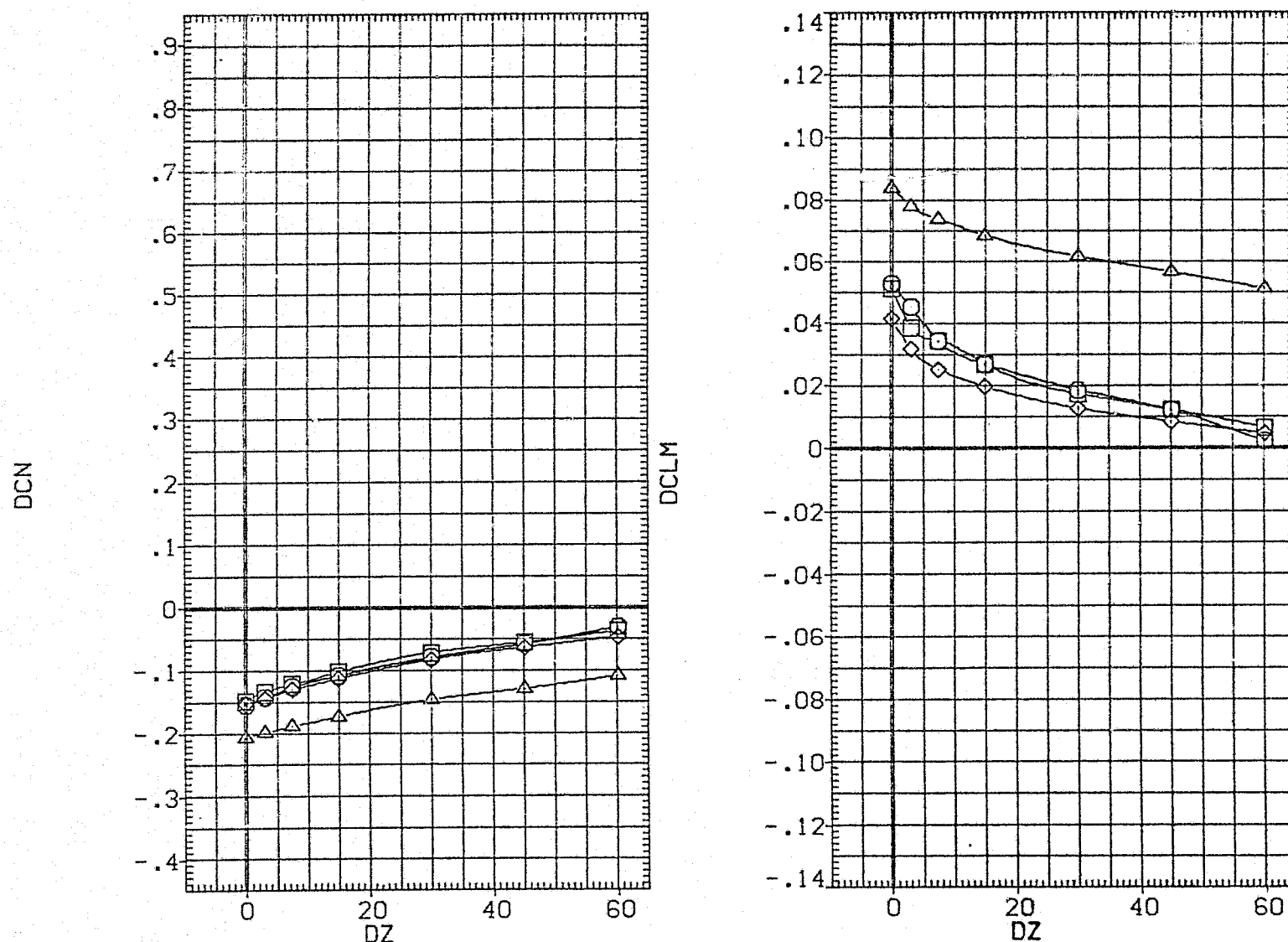


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S (052 - 010)
(LGN052)	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)
(LGN143)	CA20 (747/1 01 S1) - (01 S1)	D/S (143 - 010)
(LGN129)	CA20 (747/1 01 S1) - (01 S1)	D/S (129 - 018)
(LGN144)	DATA NOT AVAILABLE	

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
15.000	4.000	.000	.000	LREF 474.8100 IN.
.000	4.000	.000	.000	BREF 936.6900 IN.
15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
				YMRP .0000 IN.Y0
				ZMRP 375.0000 IN.Z0
				SCALE .0300

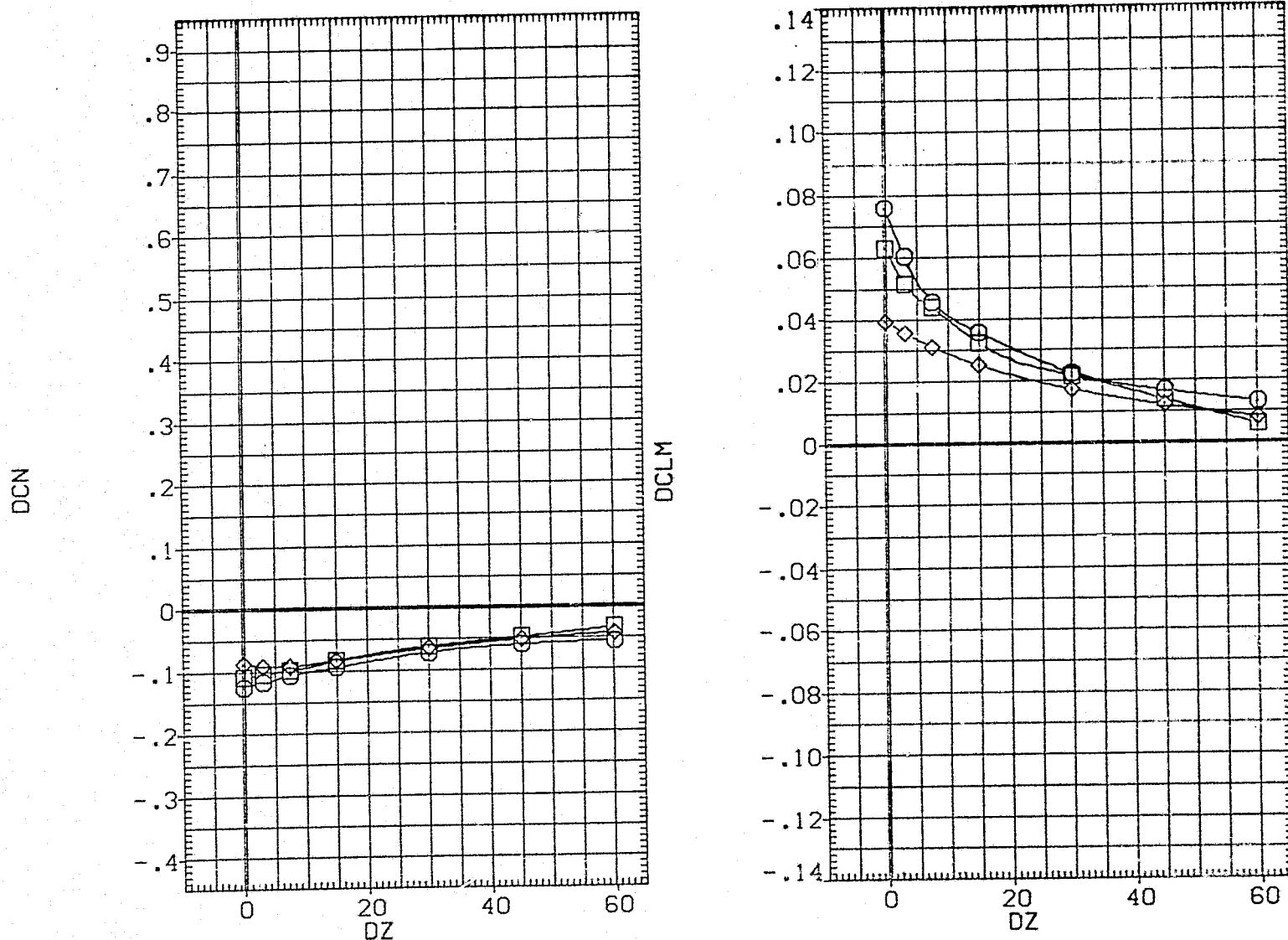


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	ALP IAC	DX	BETAC	REFERENCE INFORMATION		
LGNO52	CA20 (747/1 01 S1) - (01 S1) D/S (052 - 010)	.000	4.00	.000	.000	SREF	2690.0000	50.FT.
LGNI43	DATA NOT AVAILABLE	15.000	4.000	.000	.000	LREF	474.8100	11.
LGNI29	DATA NOT AVAILABLE	.000	4.000	.000	.000	BREF	936.6800	11.
LGNI44	DATA NOT AVAILABLE	15.000	4.000	.000	.000	XMRP	1109.0000	11.X0
						YMRP	.0000	11.Y0
						ZMRP	375.0000	11.Z0
						SCALE	.0300	

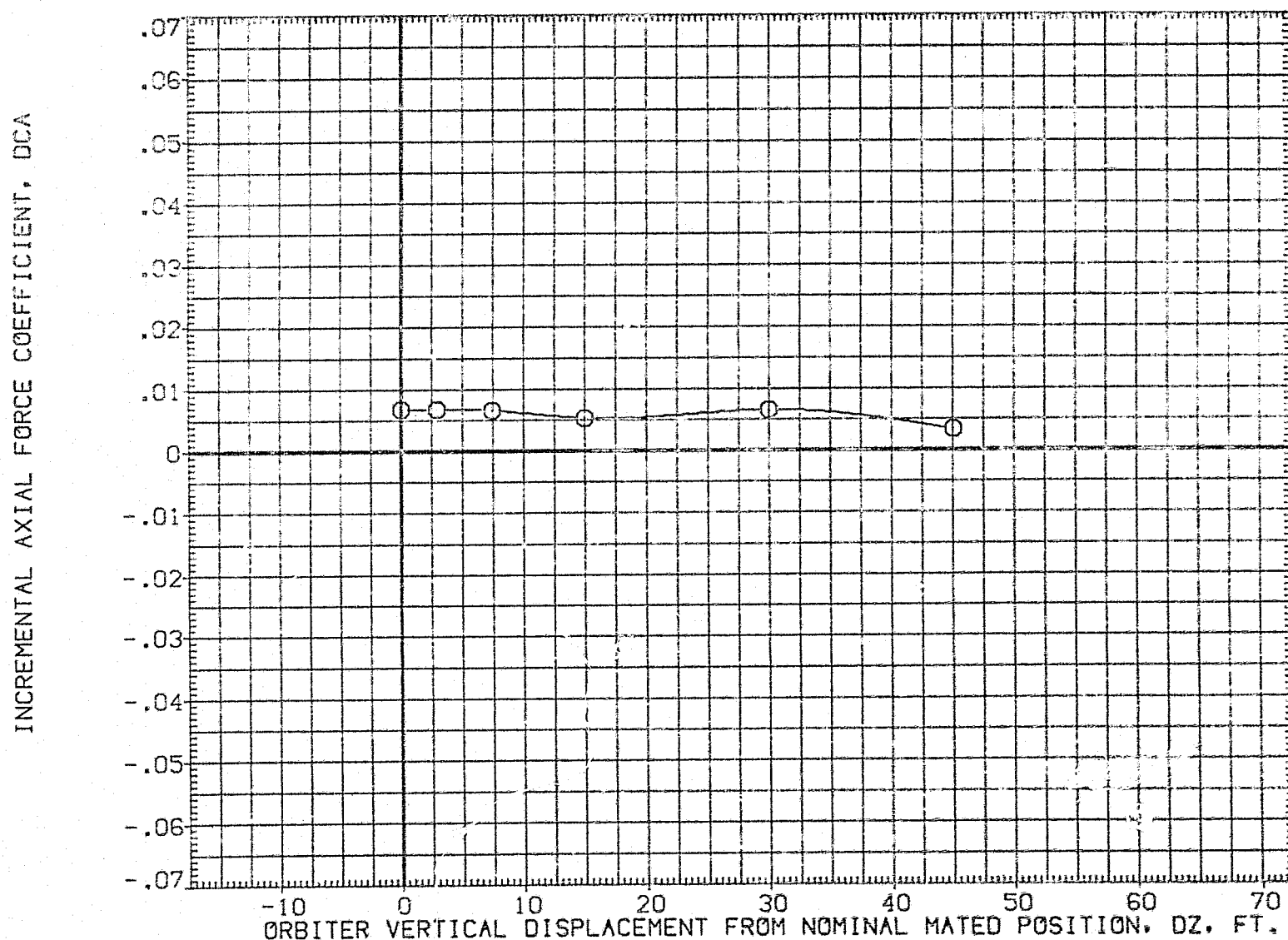


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (A) $\alpha_0 = 6.00$

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	D/S	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
(LGN052)	○	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)	.000	4.000	.000	.000	SREF 2690.0000 SO.FT.
(LGN143)	□	CA20 (747/1 01 S1) - (01 S1)	D/S (143 - 010)	15.000	4.000	.000	.000	LREF 474.8100 IN.
(LGN129)	◇	CA20 (747/1 01 S1) - (01 S1)	D/S (129 - 018)	.000	4.000	.000	.000	BREF 936.6800 IN.
(LGN144)	△	CA20 (747/1 01 S1) - (01 S1)	D/S (144 - 018)	15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
								YMRP .0000 IN.Y0
								ZMRP 375.0000 IN.Z0
								SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

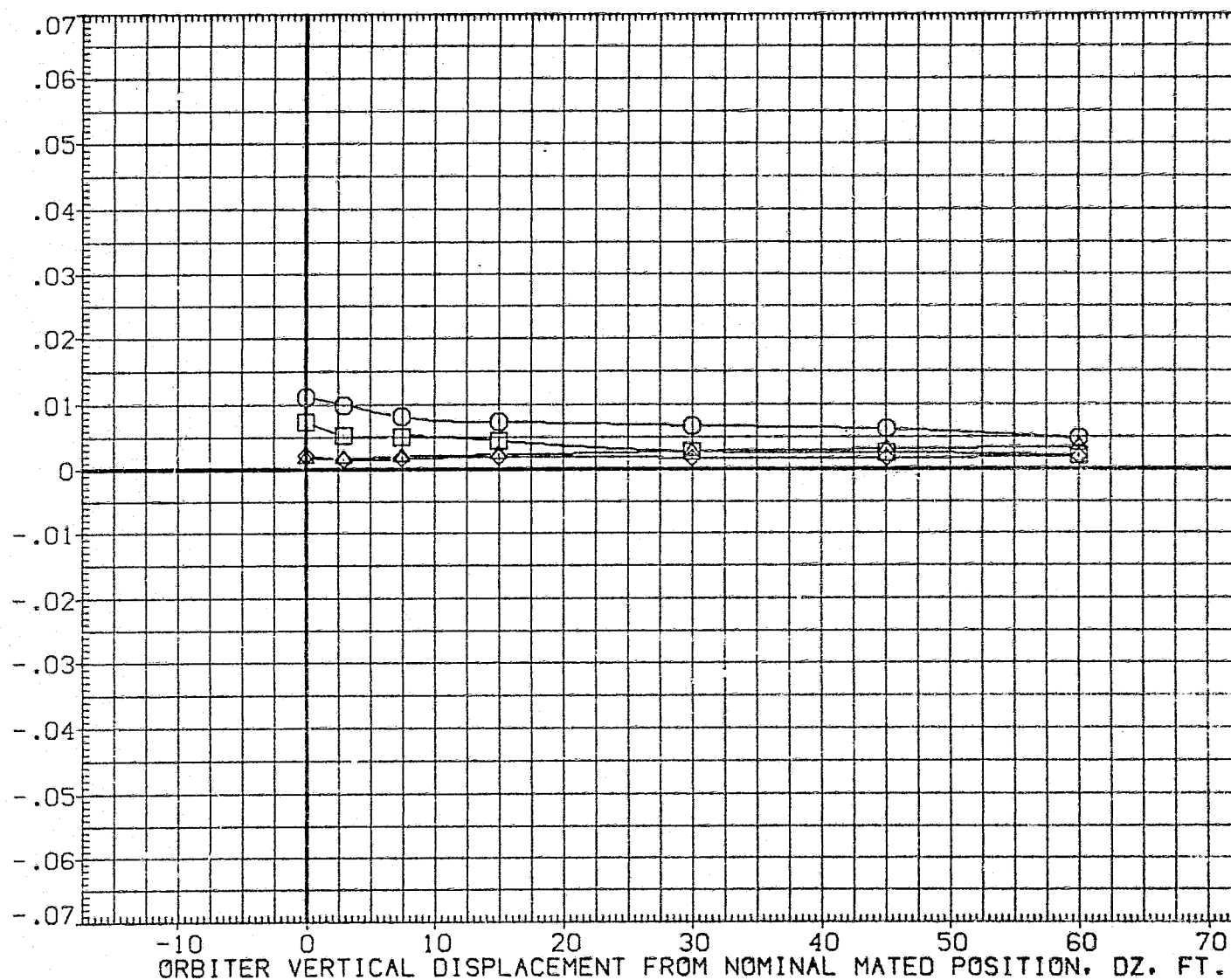


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00 PAGE 1670

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
(LGN052)	CA20 (747/1 01 S1) - (01 S1) D/S (052 - 010)	.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
(LGN143)	CA20 (747/1 01 S1) - (01 S1) D/S (143 - 010)	15.000	4.000	.000	.000	LREF 474.8100 IN.
(LGN129)	CA20 (747/1 01 S1) - (01 S1) D/S (129 - 018)	.000	4.000	.000	.000	BREF 936.6800 IN.
(LGN144)	DATA NOT AVAILABLE	15.000	4.000	.000	.000	YMRP 1109.0000 IN.X0
						YMRP .0000 IN.Y0
						ZMRP 375.0000 IN.Z0
						SCALE .0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

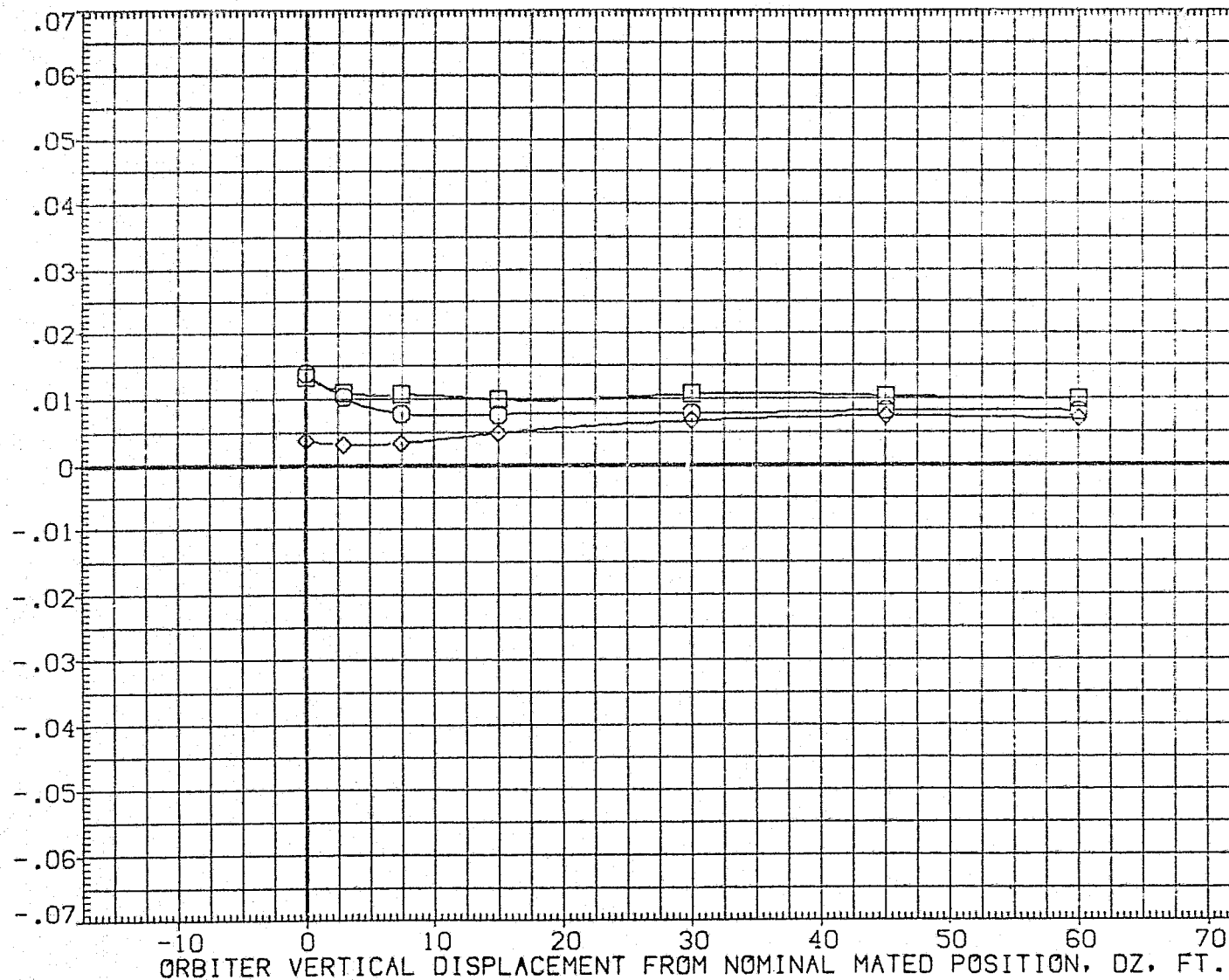


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S (052 - 010)
(LGN052)	CA20 (747/1 01 S1) - (01 S1)	
(LGN143)	DATA NOT AVAILABLE	
(LGN129)	DATA NOT AVAILABLE	
(LGN144)	DATA NOT AVAILABLE	

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	2690.0000	SQ.FT.
15.000	4.000	.000	.000	LREF	474.8100	IN.
.000	4.000	.000	.000	BREF	936.6800	IN.
15.000	4.000	.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

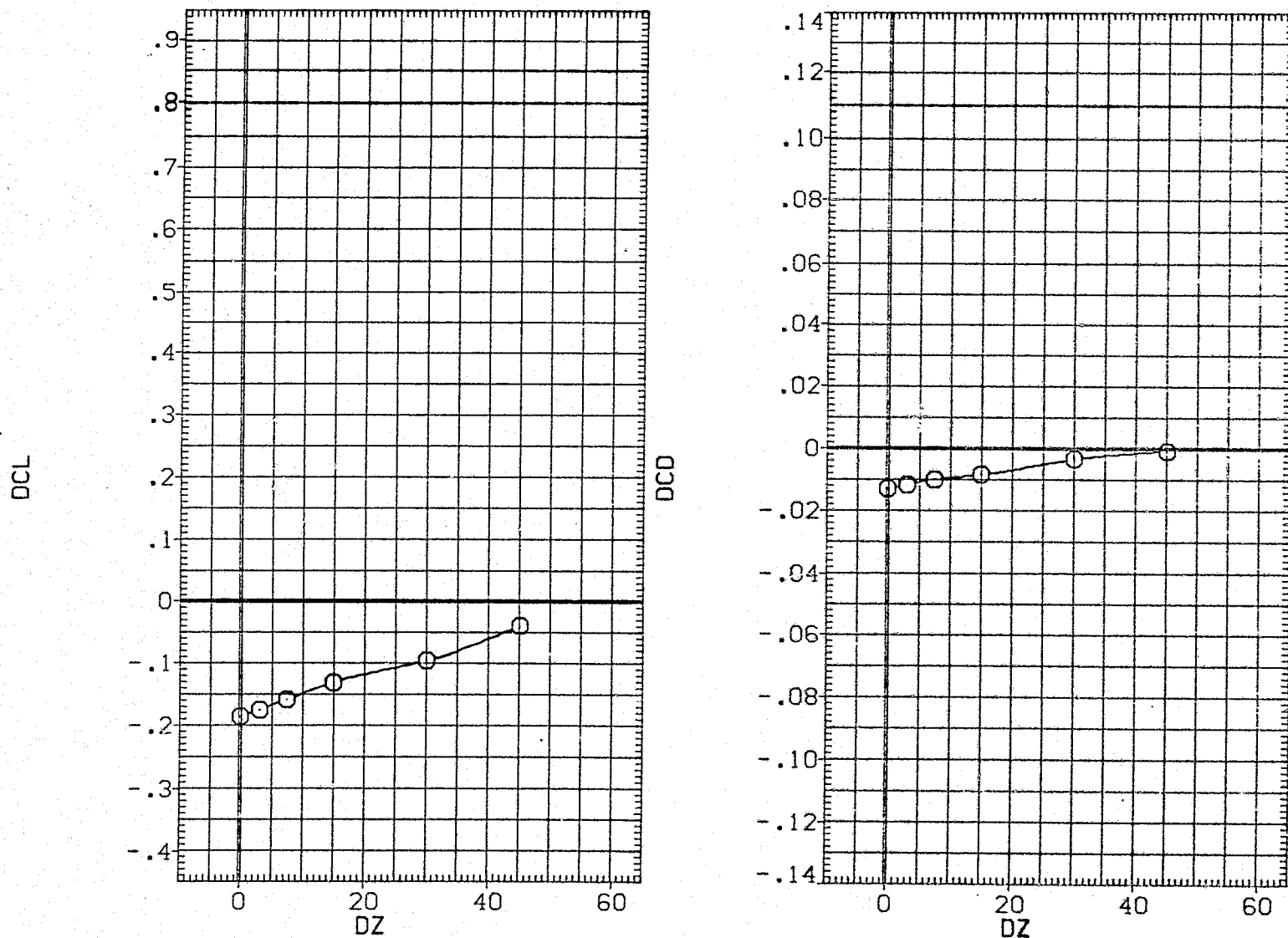


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION
(LGN052)	CA20 (747/1 01 S1) - (01 S1)	.000	4.000	.000	.000	SREF 2690.0000 SQ.FT.
(LGN143)	CA20 (747/1 01 S1) - (01 S1)	15.000	4.000	.000	.000	LREF 474.8100 IN.
(LGN129)	CA20 (747/1 01 S1) - (01 S1)	.000	4.000	.000	.000	BREF 936.6800 IN.
(LGN144)	CA20 (747/1 01 S1) - (01 S1)	15.000	4.000	.000	.000	XMRP 1109.0000 IN.X0
						YMRP .0000 IN.Y0
						ZMRP 375.0000 IN.Z0
						SCALE .0300

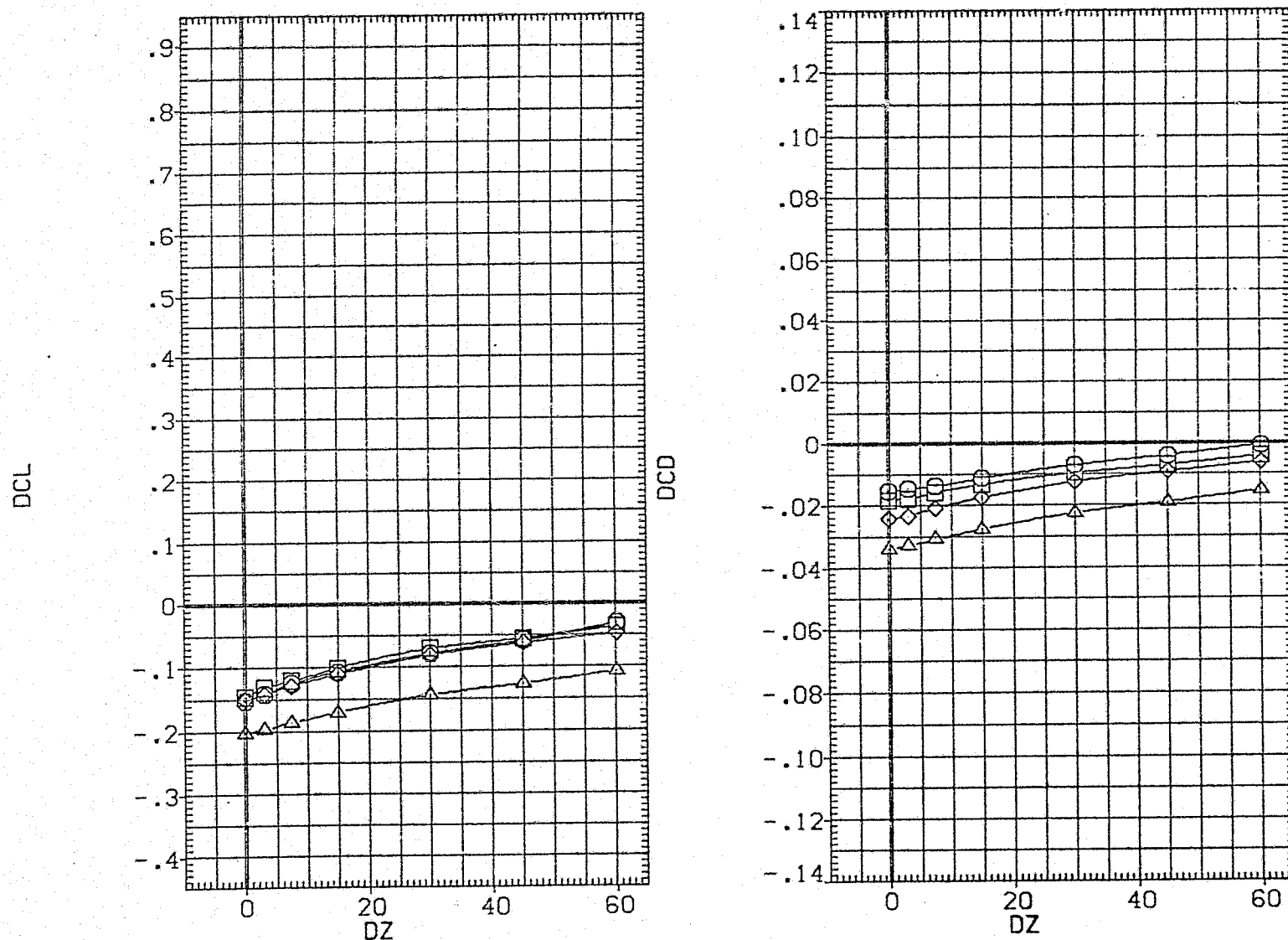


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (B)ALPHA0= 10.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(LGN052)	□	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)
(LGN143)	□	CA20 (747/1 01 S1) - (01 S1)	D/S (143 - 010)
(LGN129)	□	CA20 (747/1 01 S1) - (01 S1)	D/S (129 - 018)
(LGN144)	△	DATA NOT AVAILABLE	

RUDDER	ALPHAC	DX	BETAC	REFERENCE INFORMATION		
.000	4.000	.000	.000	SREF	2690.0000	50.FT.
15.000	4.000	.000	.000	LREF	474.8100	IN.
.000	4.000	.000	.000	BREF	935.6800	IN.
15.000	4.000	.000	.000	XMRP	1109.0000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	375.0000	IN.ZC
				SCALE	.0300	

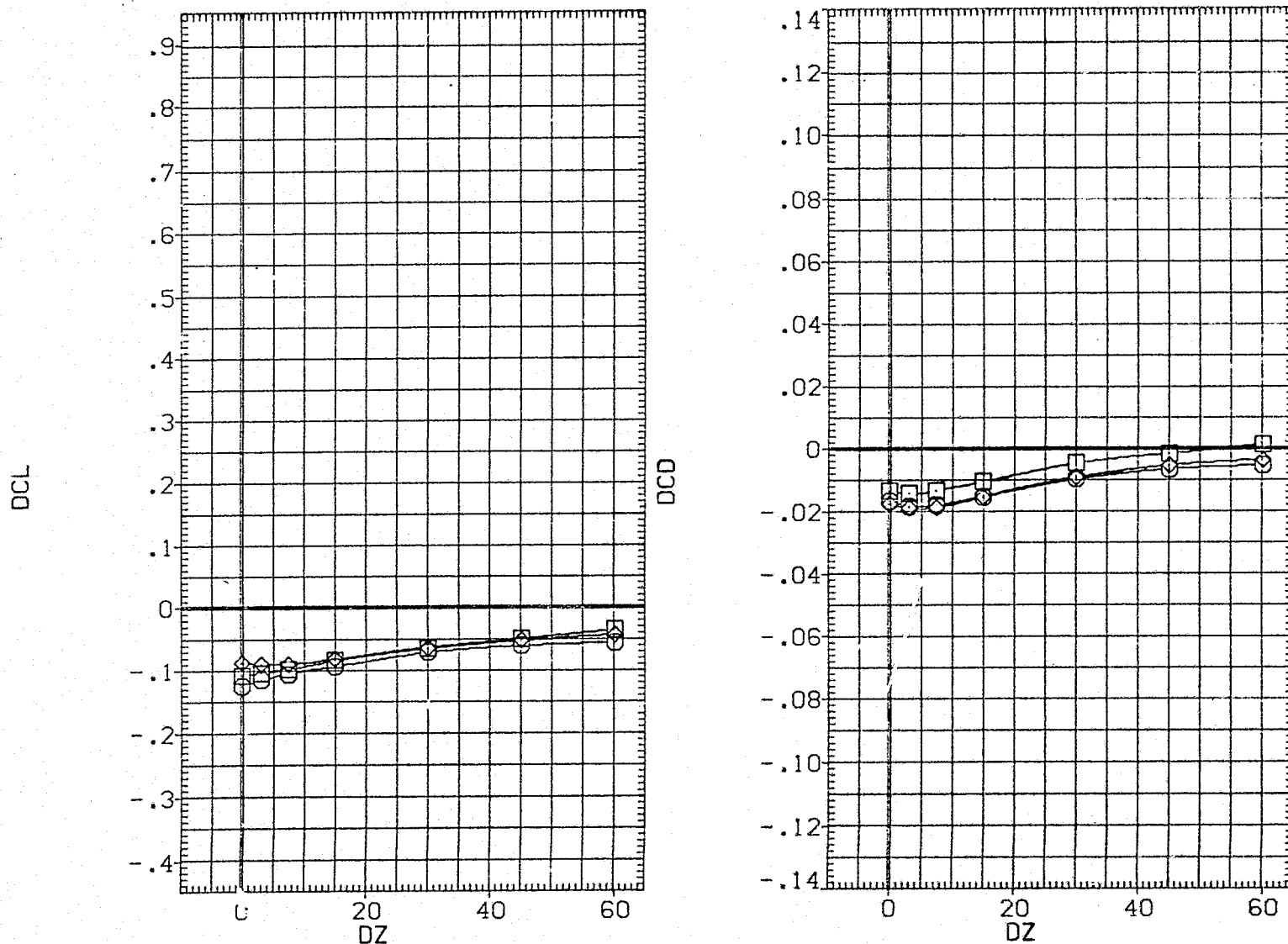


FIG 35 RUDDER EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(IGN145) □ DATA NOT AVAILABLE
 (IGN052) □ CA20 747/1 01 S1
 (IGN149) □ DATA NOT AVAILABLE
 (IGN146) △ DATA NOT AVAILABLE

CARRIER DATA

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	5500.0000	50.FT.
5.000	.000	4.000	.000	LREF	327.7800	IN.
5.000	-10.000	4.000	.000	BREF	2348.0400	IN.
10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

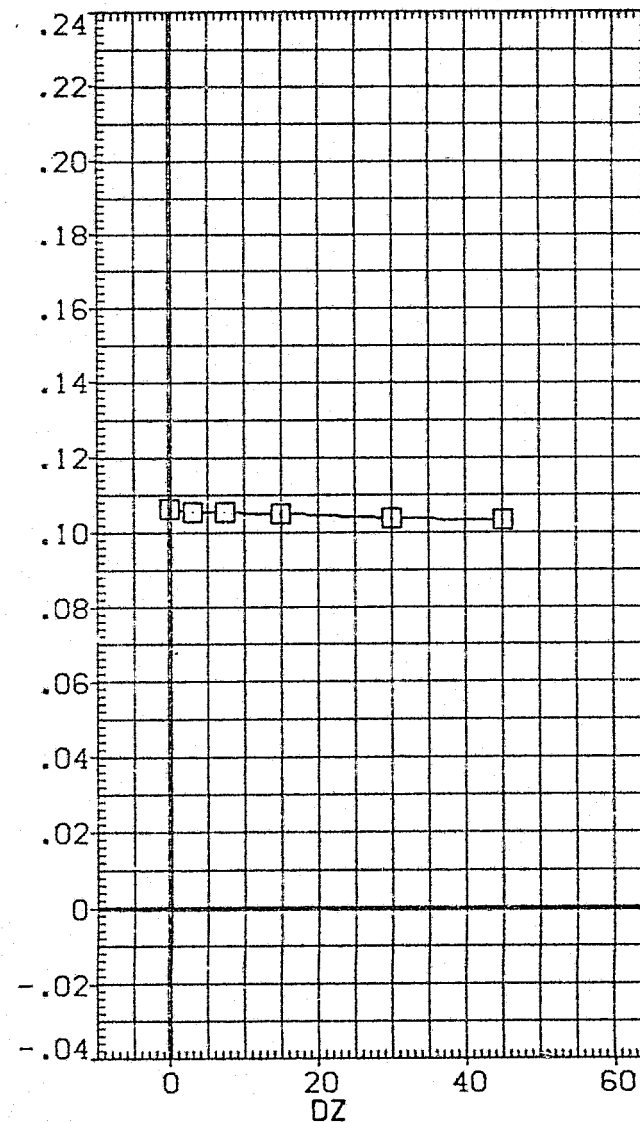
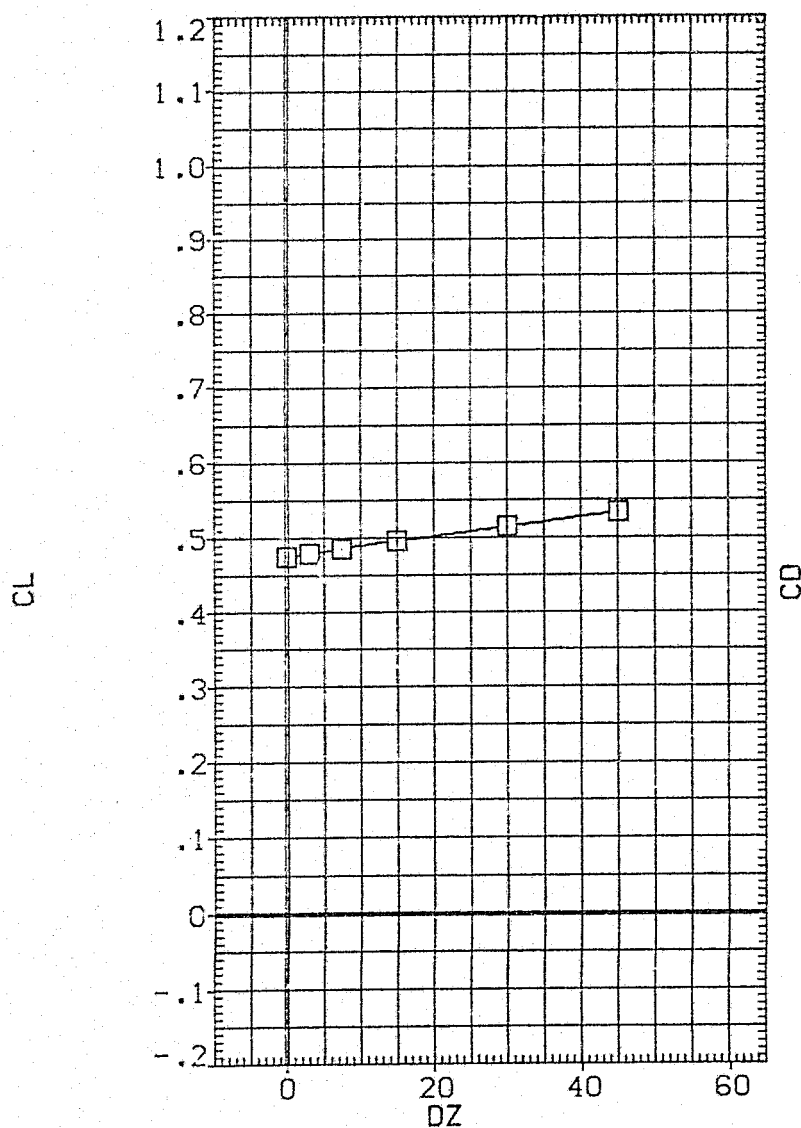


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A)ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN145)	CA20 747/1 01 S1
(IGN052)	CA20 747/1 01 S1
(IGN149)	CA20 747/1 01 S1
(IGN146)	CA20 747/1 01 S1

CARRIER DATA
CARRIER DATA
CARRIER DATA
CARRIER DATA

ELEVON	AIRON	ALPHAC	DX
.000	.000	4.000	.000
5.000	.000	4.000	.000
5.000	-10.000	4.000	.000
10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

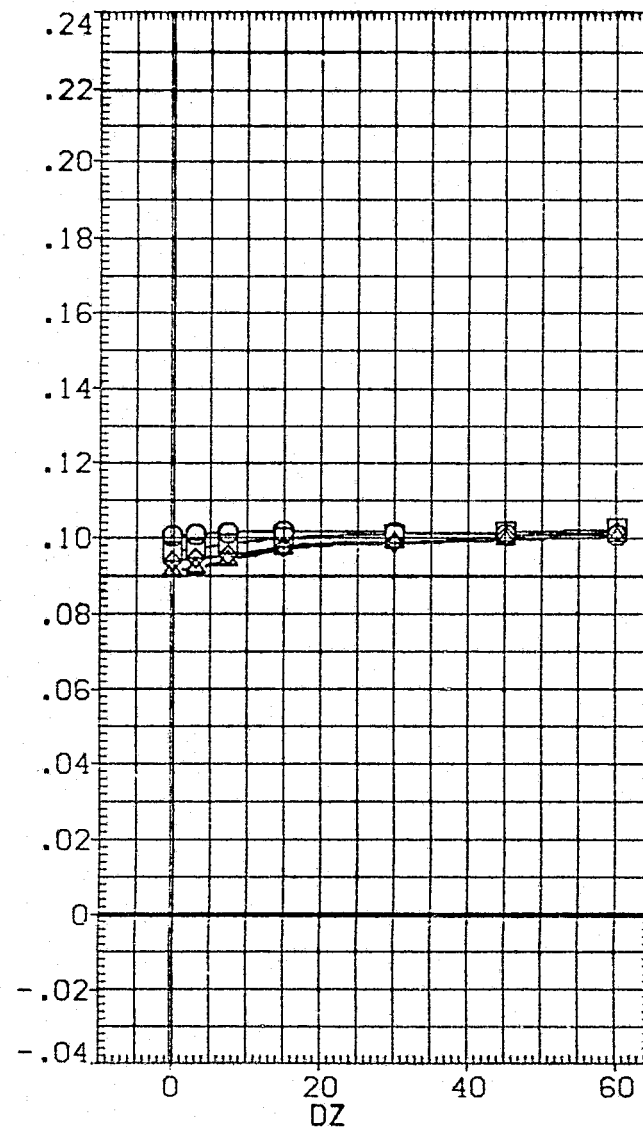
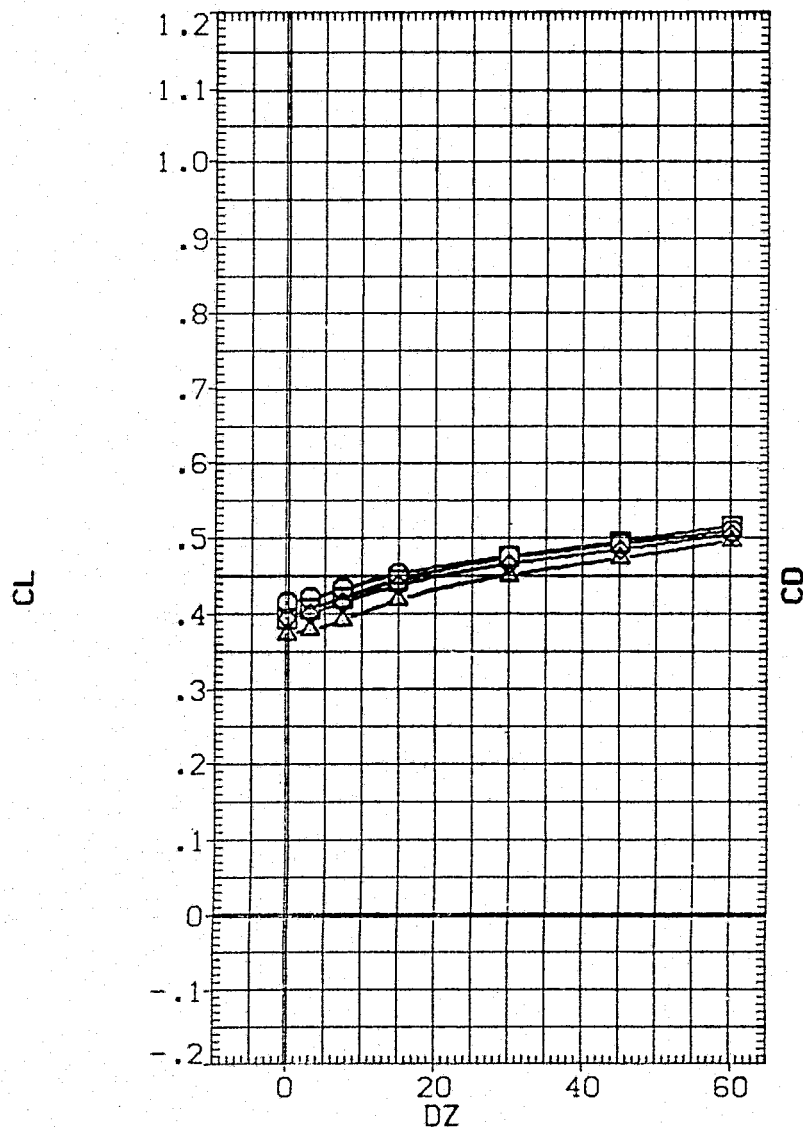


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN145)	CA20 747/1 01 S1
(IGN052)	CA20 747/1 01 S1
(IGN149)	CA20 747/1 01 S1
(IGN146)	CA20 747/1 01 S1

CARRIER DATA
ELEVON
CARRIER DATA
CARRIER DATA
CARRIER DATA

ELEVON	AILRON	ALPHAC	DX
.000	.000	4.000	.000
5.000	.000	4.000	.000
5.000	-10.000	4.000	.000
10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

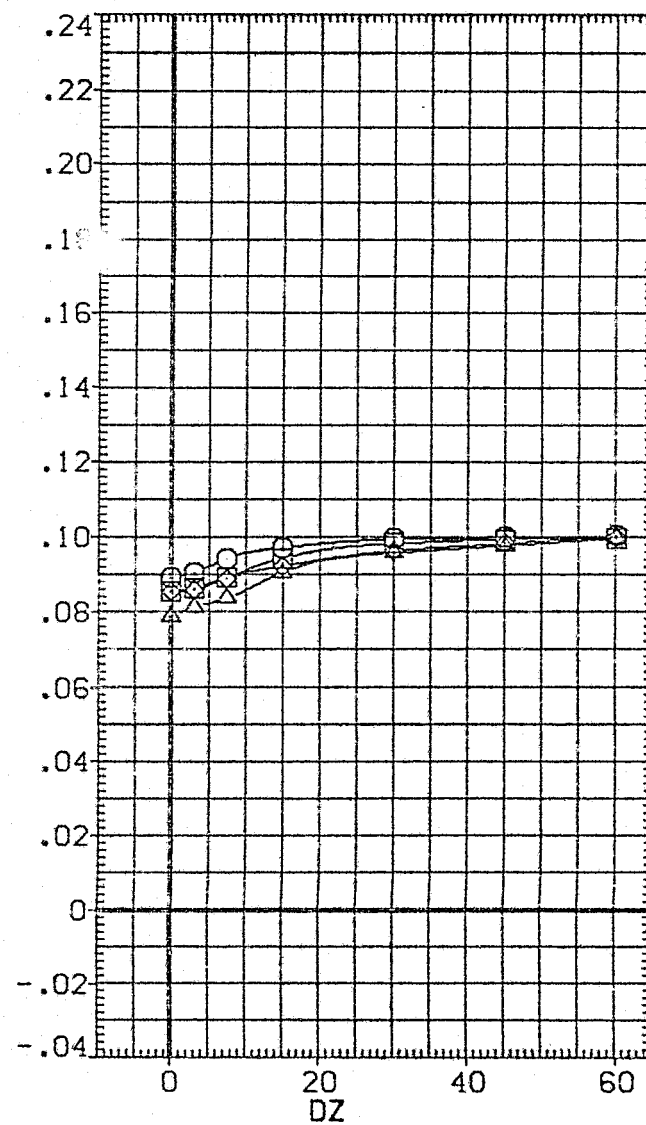
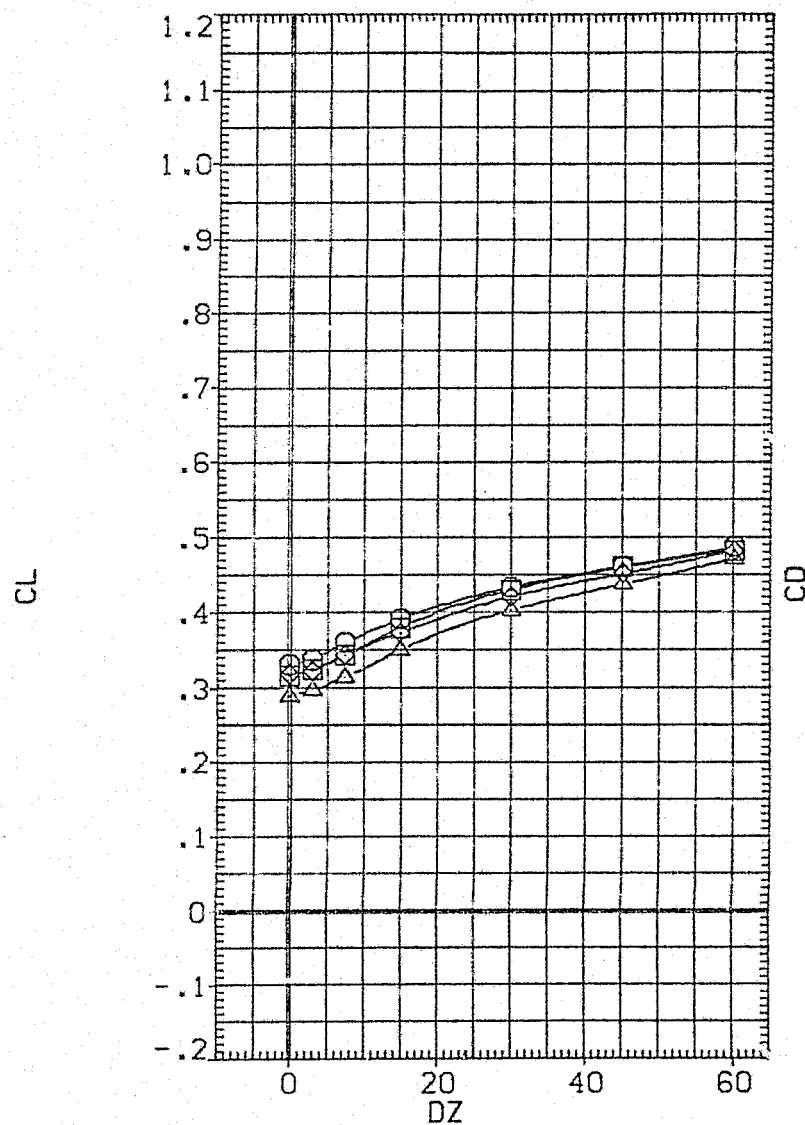


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 ((C))ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION
 (IGN145) □ DATA NOT AVAILABLE
 (IGN052) □ CA20 747/1 01 S1
 (IGN149) ◇ DATA NOT AVAILABLE
 (IGN146) △ DATA NOT AVAILABLE

CARRIER DATA

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	5500.0000	50.FT.
5.000	.000	4.000	.000	LREF	327.7800	IN.
5.000	-10.000	4.000	.000	BREF	2348.0400	IN.
10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

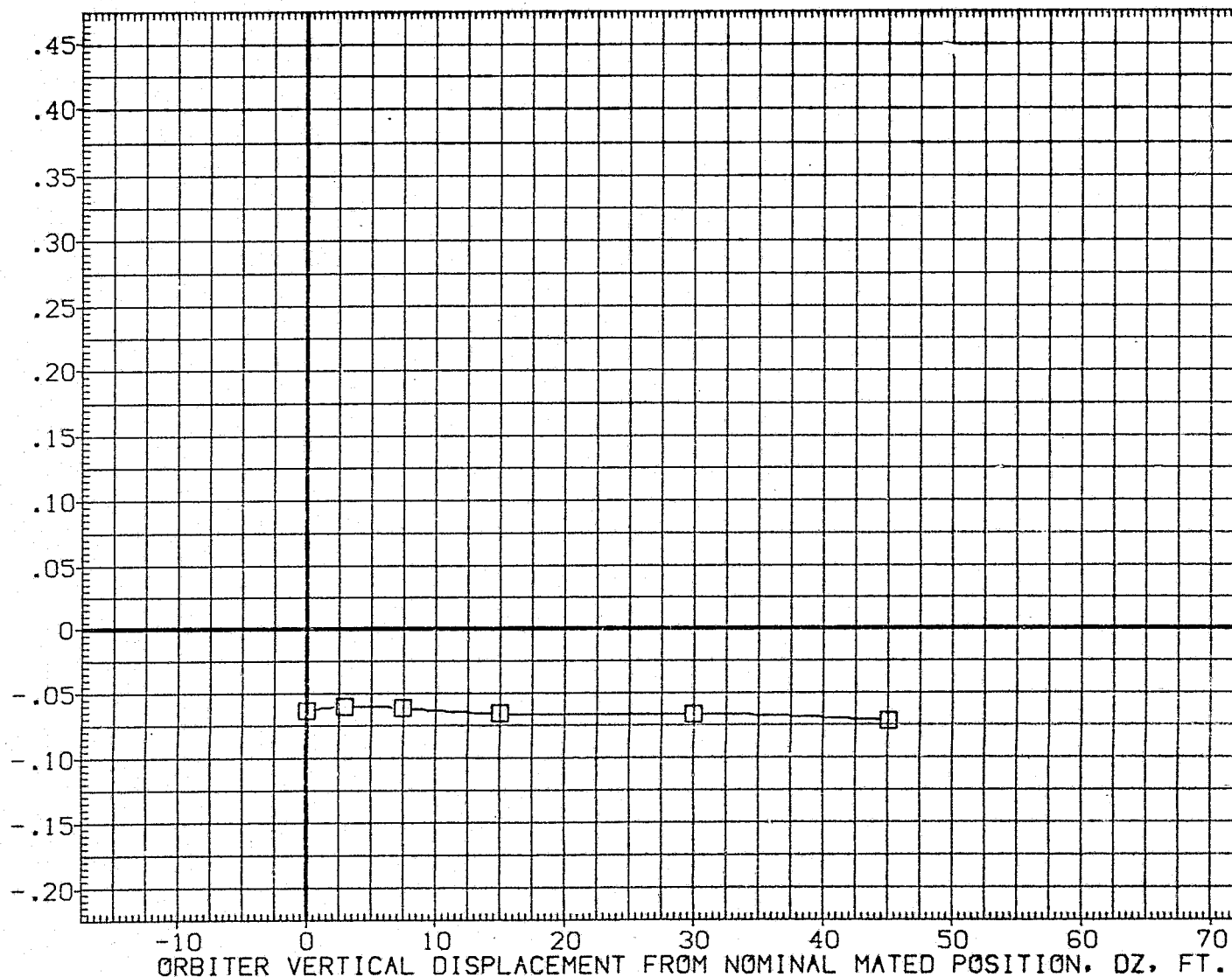
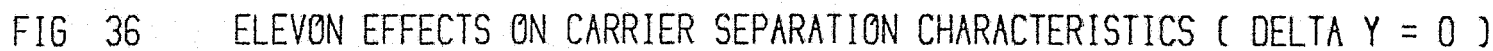


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

PITCHING MOMENT COEFFICIENT, CLM

PAGE 1679

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(IGN145)	○	CA20	747/1 01 S1
(IGN052)	□	CA20	747/1 01 S1
(IGN149)	◇	CA20	747/1 01 S1
(IGN146)	△	CA20	747/1 01 S1

	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
CARRIER DATA	.000	.000	4.000	.000	SREF	5500.0000	50.FT.
CARRIER DATA	5.000	.000	4.000	.000	LREF	327.7800	IN.
CARRIER DATA	5.000	-10.000	4.000	.000	BREF	2348.0400	IN.
CARRIER DATA	10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
					YMRP	.0000	IN.YC
					ZMRP	190.8000	IN.ZC
					SCALE	.0300	

PITCHING MOMENT COEFFICIENT, CLM

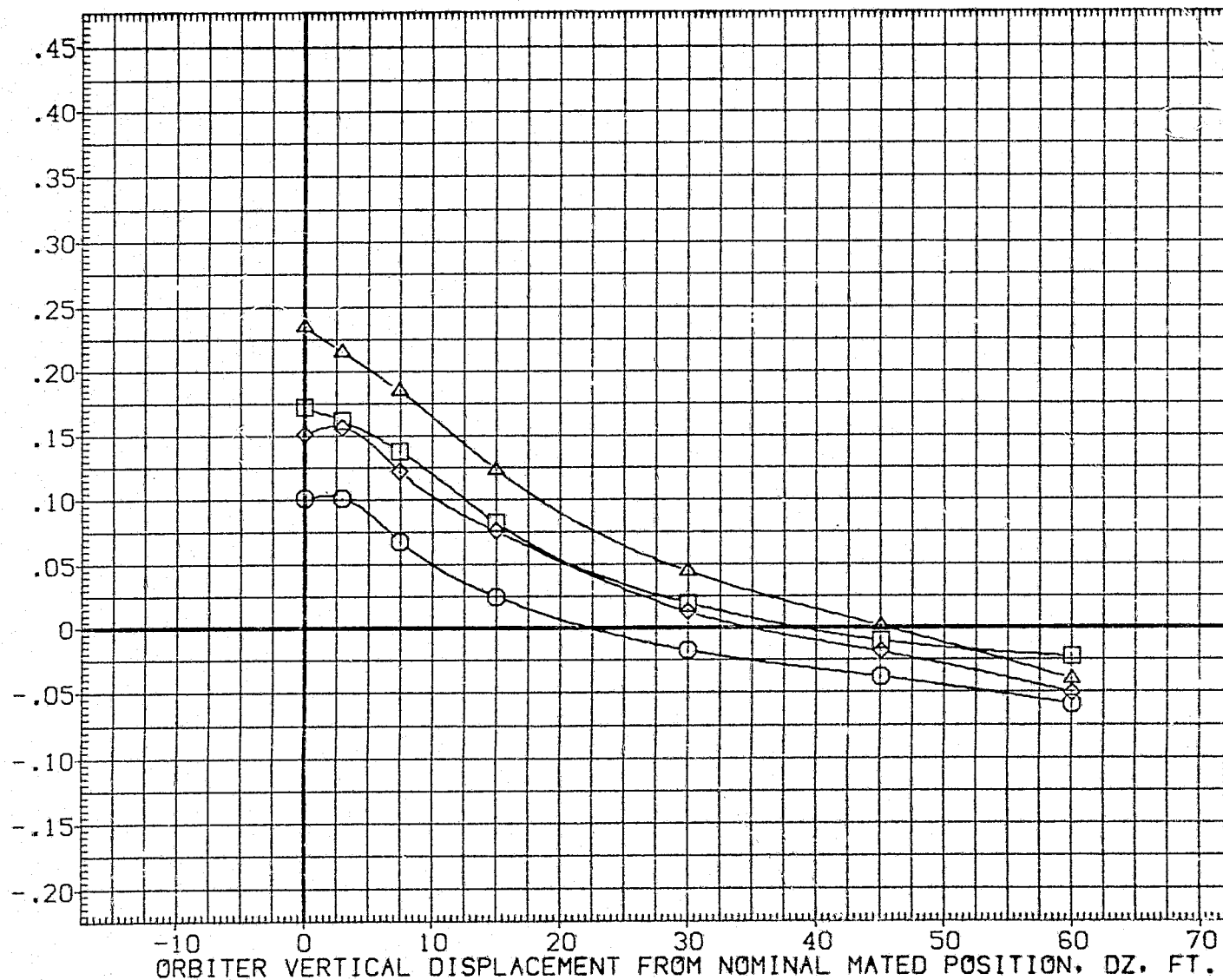


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00 PAGE 1680

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(IGN145)	□	DATA NOT AVAILABLE
(IGN052)	□	CA20 747/1 CI S1
(IGN149)	×	DATA NOT AVAILABLE
(IGN146)	△	DATA NOT AVAILABLE

CARRIER DATA		ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
		.000	.000	4.000	.000	SREF	5500.0000	SD.FT.
		5.000	.000	4.000	.000	LREF	327.7800	IN.
		5.000	-10.000	4.000	.000	BREF	2348.0400	IN.
		10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
						YMRP	.0000	IN.YC
						ZMRP	190.8000	IN.ZC
						SCALE	.0300	

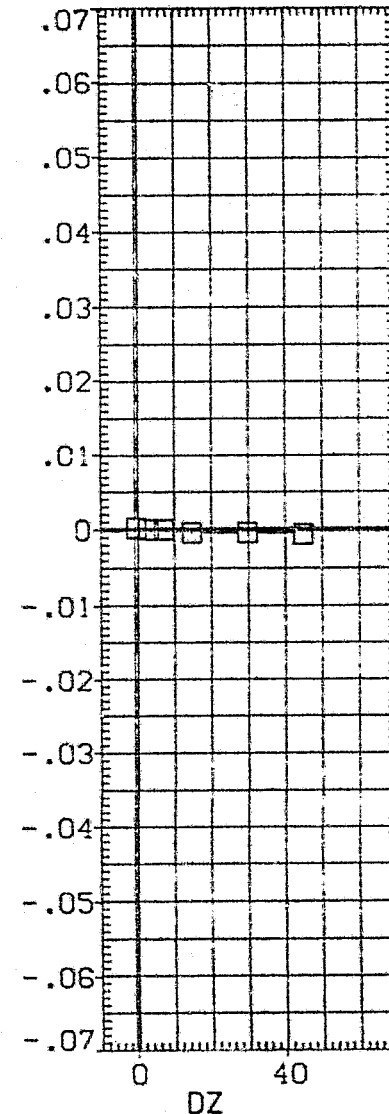
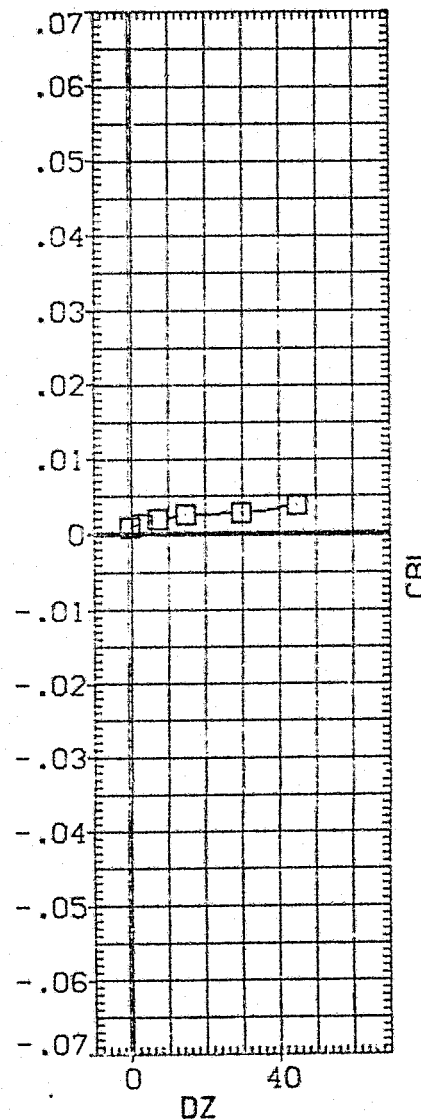
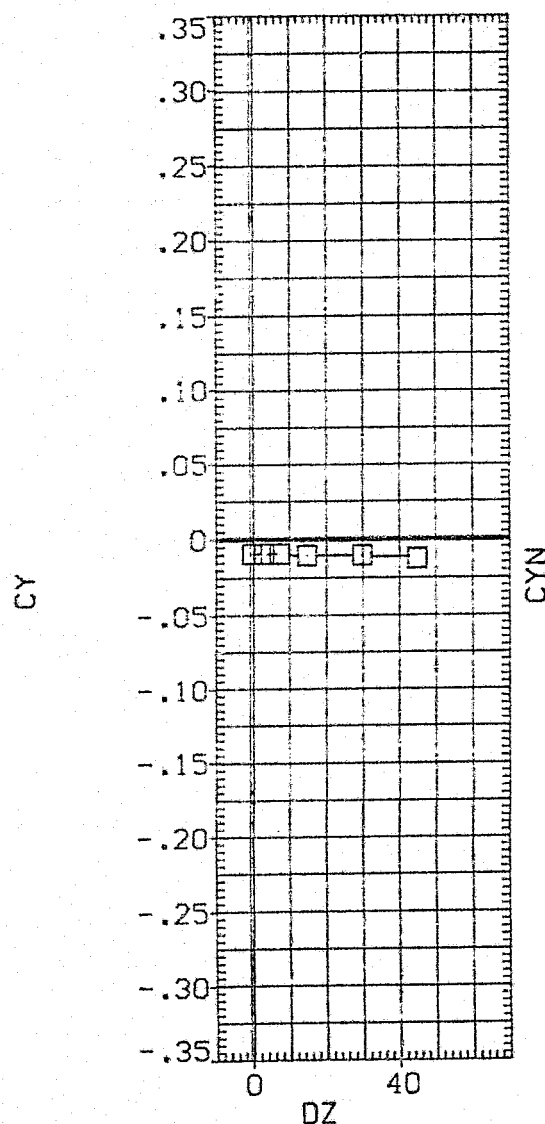


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (A) $\text{ALPHA} = 6.00$ PAGE 1681

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(IGN145)	○	CA20	747/1 01 S1
(IGN052)	□	CA20	747/1 01 S1
(IGN149)	◇	CA20	747/1 01 S1
(IGN146)	△	CA20	747/1 01 S1

		ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
CARRIER DATA		.000	.000	4.000	.000	SREF	5500.0000	SQ.FT.
CARRIER DATA		5.000	.000	4.000	.000	LREF	327.7800	IN.
CARRIER DATA		5.000	-10.000	4.000	.000	BREF	2348.0400	IN.
CARRIER DATA		10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
						YMRP	.0000	IN.YC
						ZMRP	190.8000	IN.ZC
						SCALE	.0300	

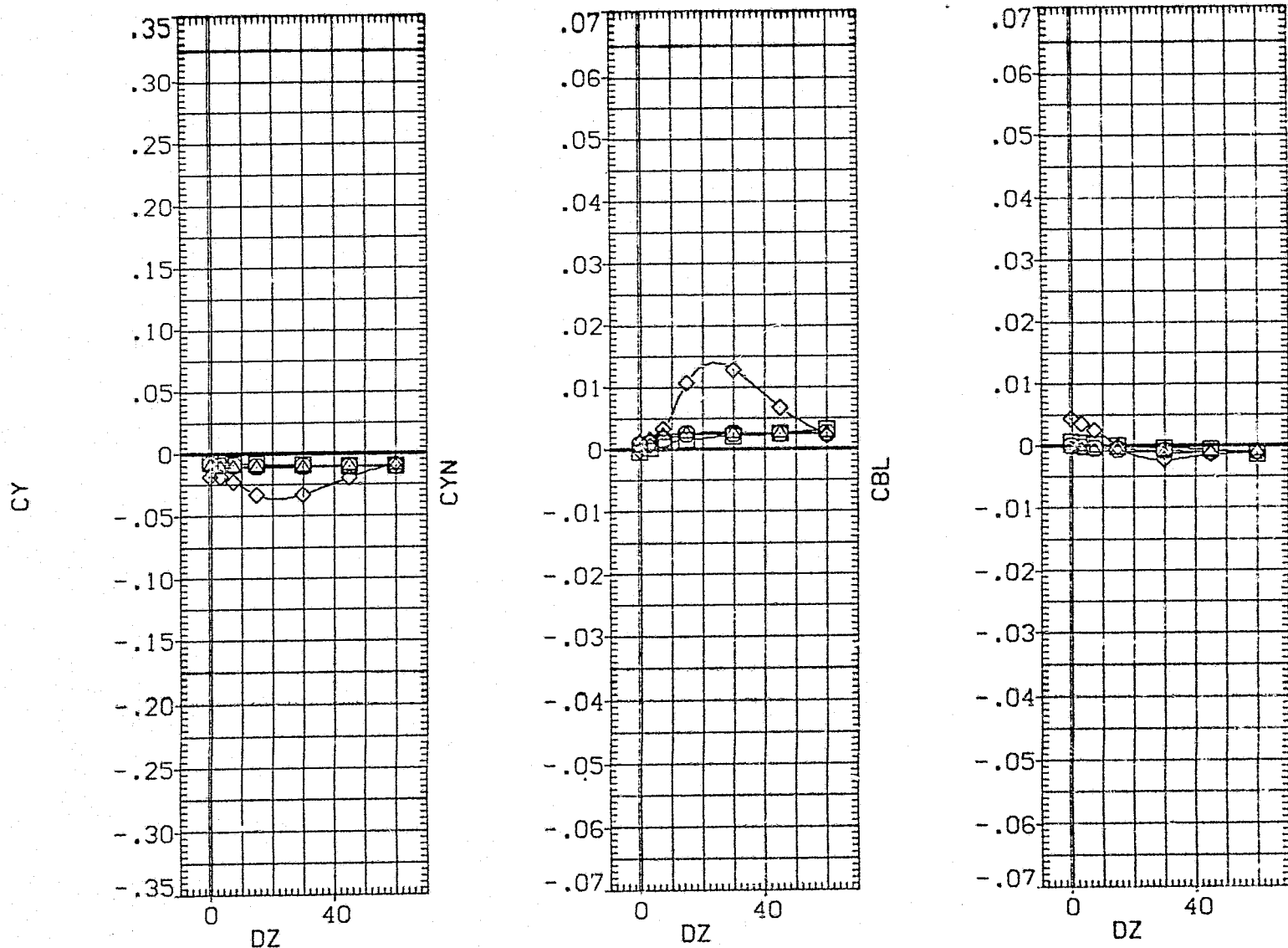


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (B) ALPHA0 = 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN145)	CA20 747/1 01 S1
(IGN052)	CA20 747/1 01 S1
(IGN143)	CA20 747/1 01 S1
(IGN146)	CA20 747/1 01 S1

	ELEVON	AILRON	ALPHAC	DX
CARRIER DATA	.000	.000	4.000	.000
CARRIER DATA	5.000	.000	4.000	.000
CARRIER DATA	5.000	-10.000	4.000	.000
CARRIER DATA	10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

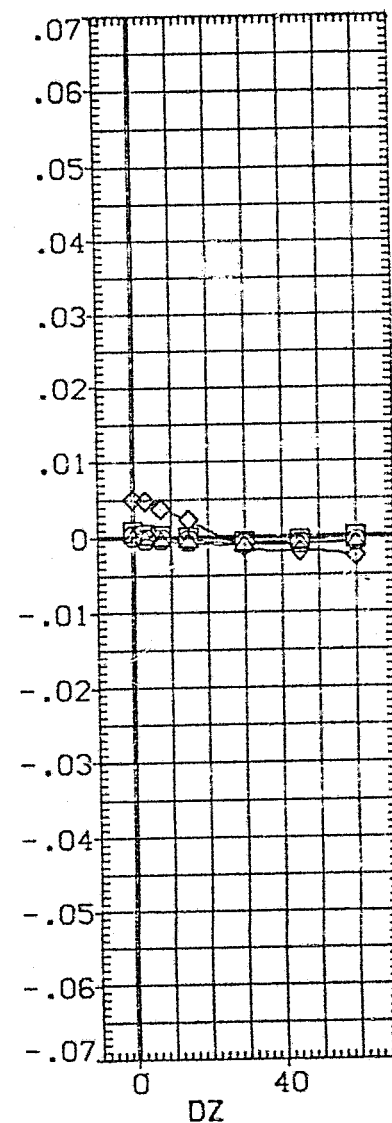
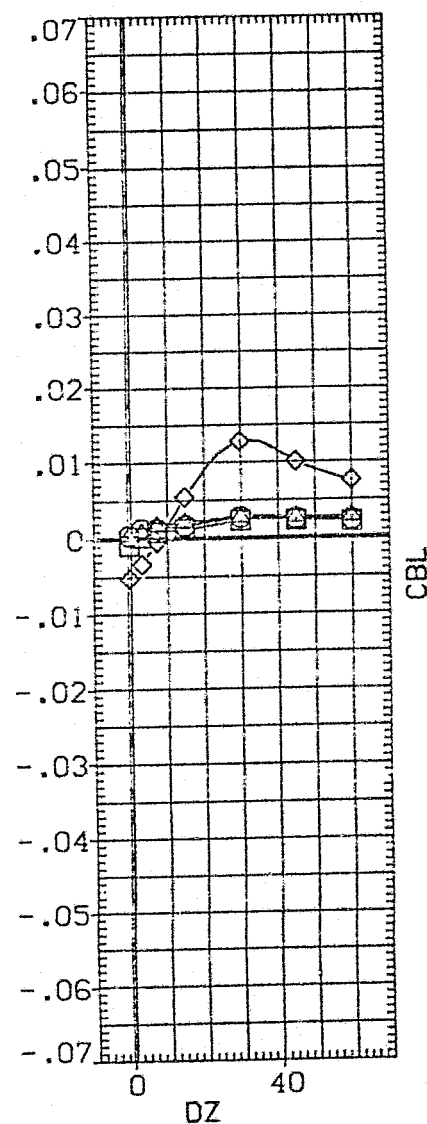
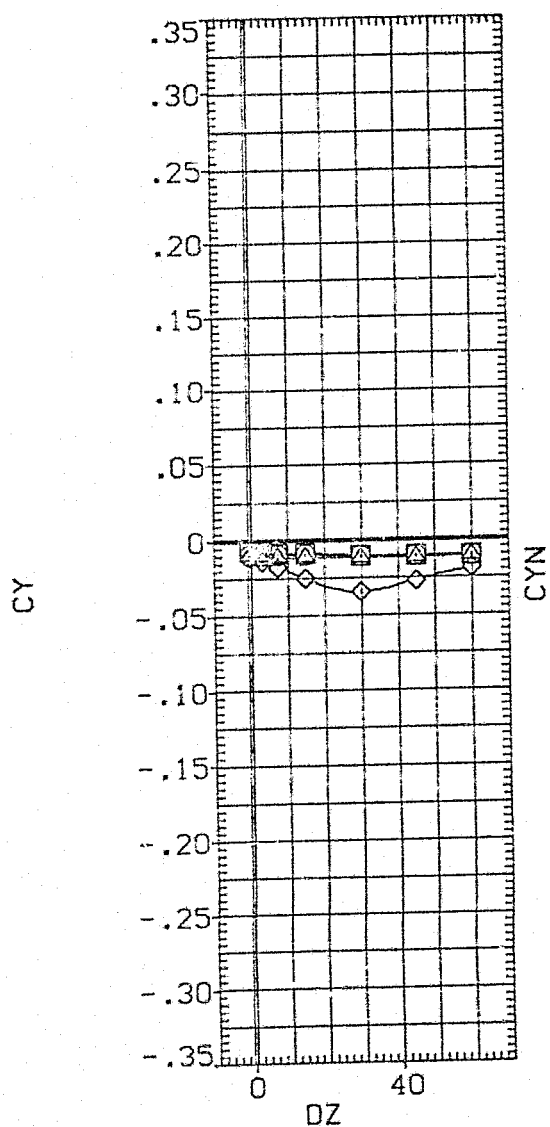


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN145)	DATA NOT AVAILABLE
(IGN052)	CA20 747/1 01 S1
(IGN149)	DATA NOT AVAILABLE
(IGN146)	DATA NOT AVAILABLE

CARRIER DATA		ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
		.000	.000	4.000	.000	SREF	5500.0000	SQ.FT.
		5.000	.000	4.000	.000	LREF	327.7800	IN.
		5.000	-10.000	4.000	.000	BREF	2348.6400	IN.
		10.000	.000	4.000	.000	XMRP	1339.9300	IN.XC
						YMRP	.0000	IN.YC
						ZMRP	190.8000	IN.ZC
						SCALE	.0300	

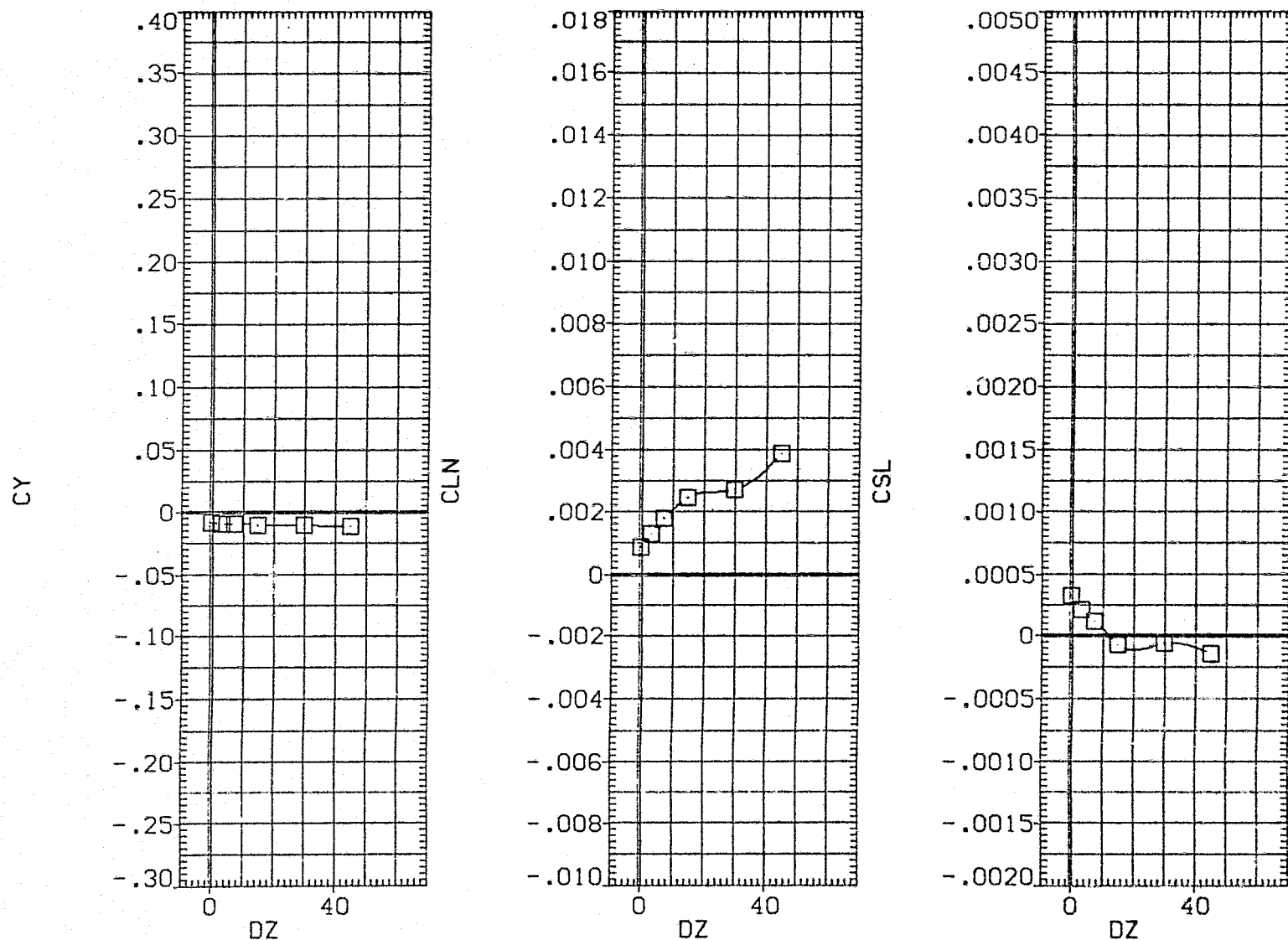


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHAO = 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(IGN145) ○	CA20 747/1 01 S1
(IGN052) □	CA20 747/1 01 S1
(IGN149) ◇	CA20 747/1 01 S1
(IGN146) △	CA2U 747/1 01 S1

	ELEVON	AILRON	ALPHAC	DX
CARRIER DATA	.000	.000	4.000	.000
CARRIER DATA	5.000	.000	4.000	.000
CARRIER DATA	5.000	-10.000	4.000	.000
CARRIER DATA	10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

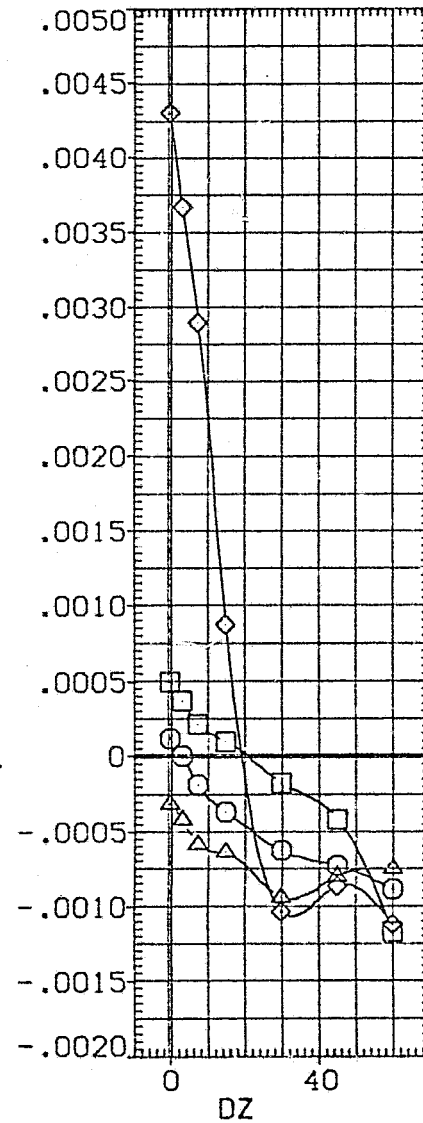
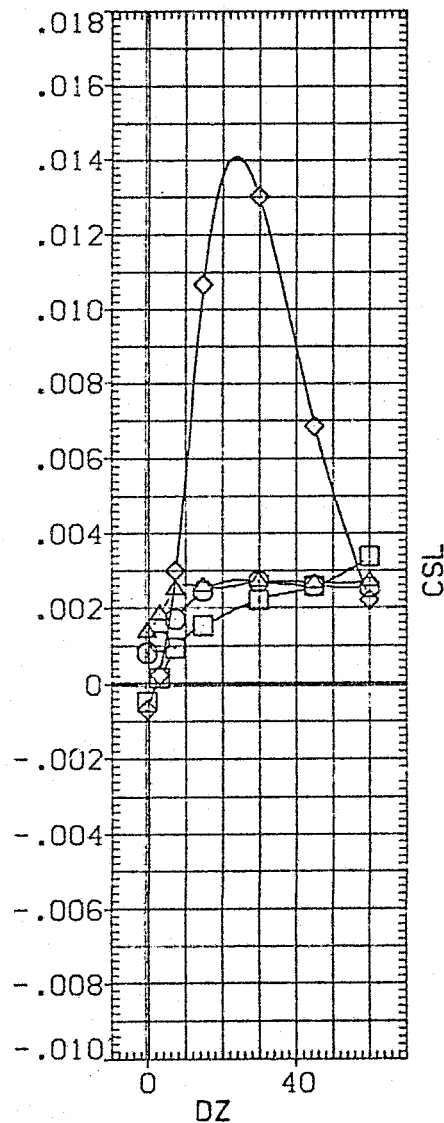
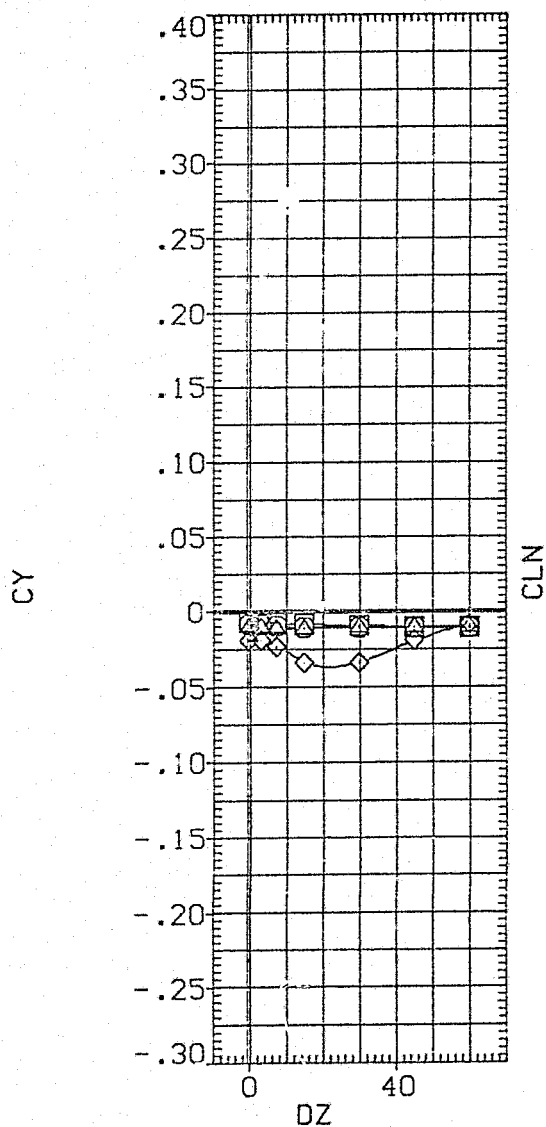


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(IGN145)	○	CA20	747/1 01 S1
(IGN052)	□	CA20	747/1 01 S1
(IGN149)	◇	CA20	747/1 01 S1
(IGN146)	△	CA2U	747/1 01 S1

	ELEVON	AIRON	ALPHAC	DX
CARRIER DATA	.000	.000	4.000	.000
CARRIER DATA	5.000	.000	4.000	.000
CARRIER DATA	5.000	-10.000	4.000	.000
CARRIER DATA	10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

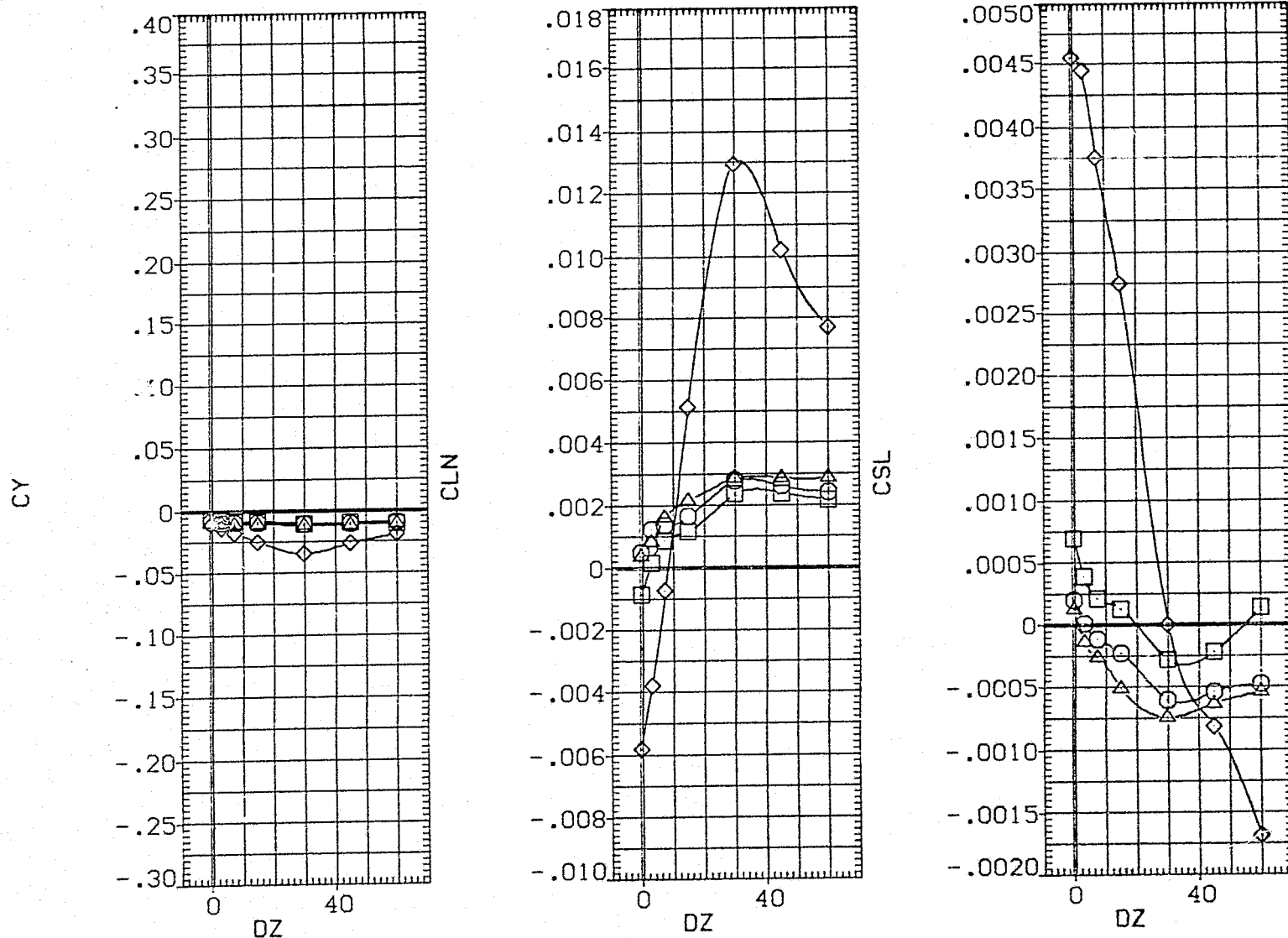


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(KGN145)	DATA NOT AVAILABLE
(KGN052)	CA20 (747/1 01 S1) - (747/1) D/S (052 - 035)
(KGN149)	DATA NOT AVAILABLE
(KGN146)	DATA NOT AVAILABLE

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	5500.0000	50.FY.
5.000	.000	4.000	.000	LREF	327.7800	IN.
5.000	.000	4.000	.000	BREF	2348.0400	IN.
10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

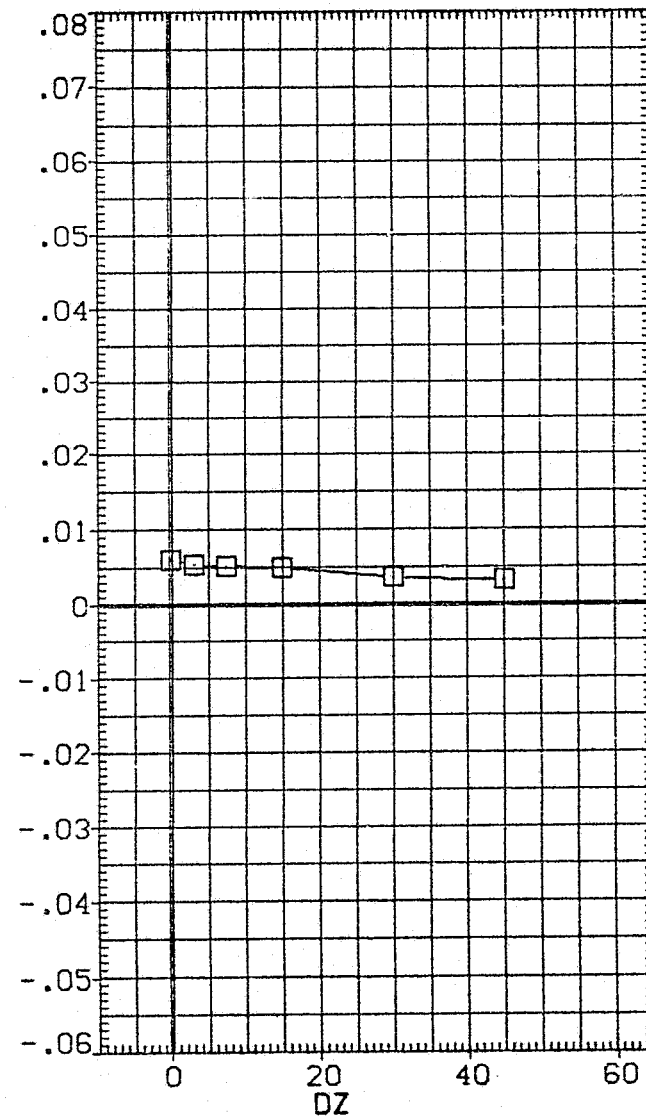
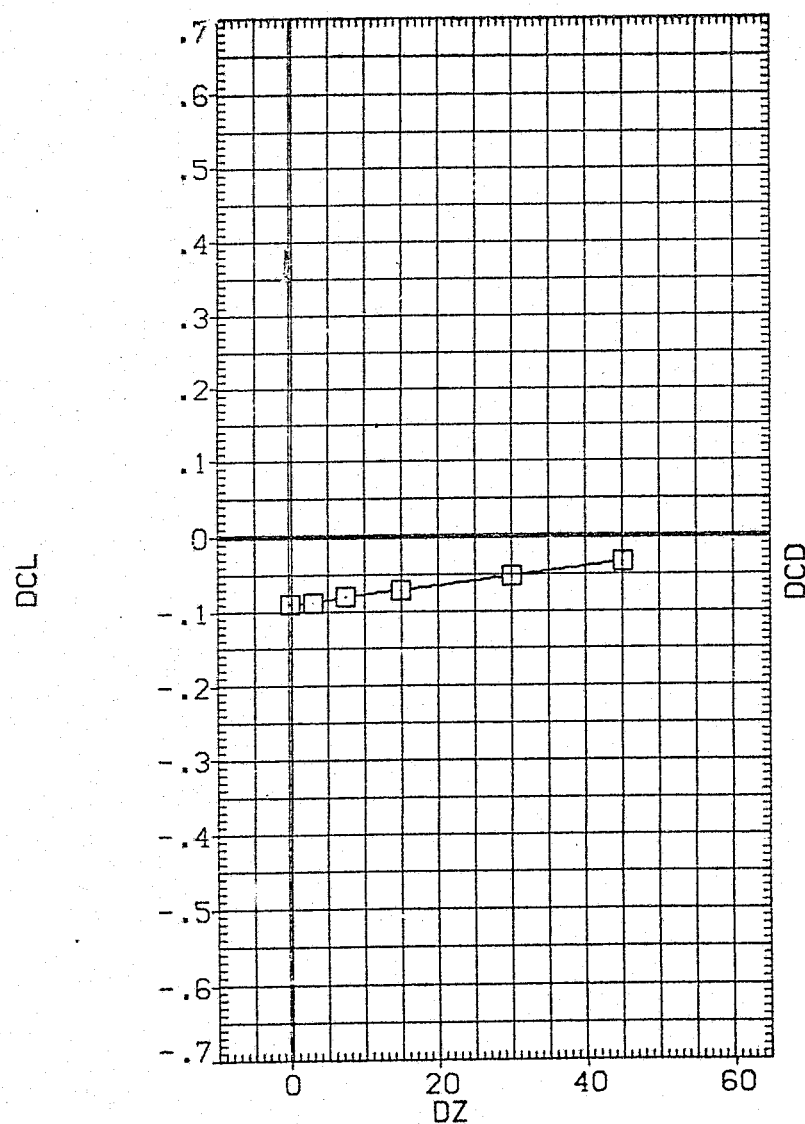


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S	ELEVON	AILERON	ALPHAC	DX	REFERENCE INFORMATION		
(KGN145)	CA20 (747/1 01 S1) - (747/1)	D/S (145 - 035)	.000	.000	4.000	.000	SREF	5500.0000	50.FT.
(KGN052)	CA20 (747/1 01 S1) - (747/1)	D/S (052 - 035)	5.000	.000	4.000	.000	LREF	327.7800	IN.
(KGN149)	CA20 (747/1 01 S1) - (747/1)	D/S (149 - 035)	5.000	.000	4.000	.000	BREF	2348.0400	IN.
(KGN146)	CA20 (747/1 01 S1) - (747/1)	D/S (146 - 035)	10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
							YMRP	.0000	IN.YC
							ZMRP	190.8000	IN.ZC
							SCALE	.0300	

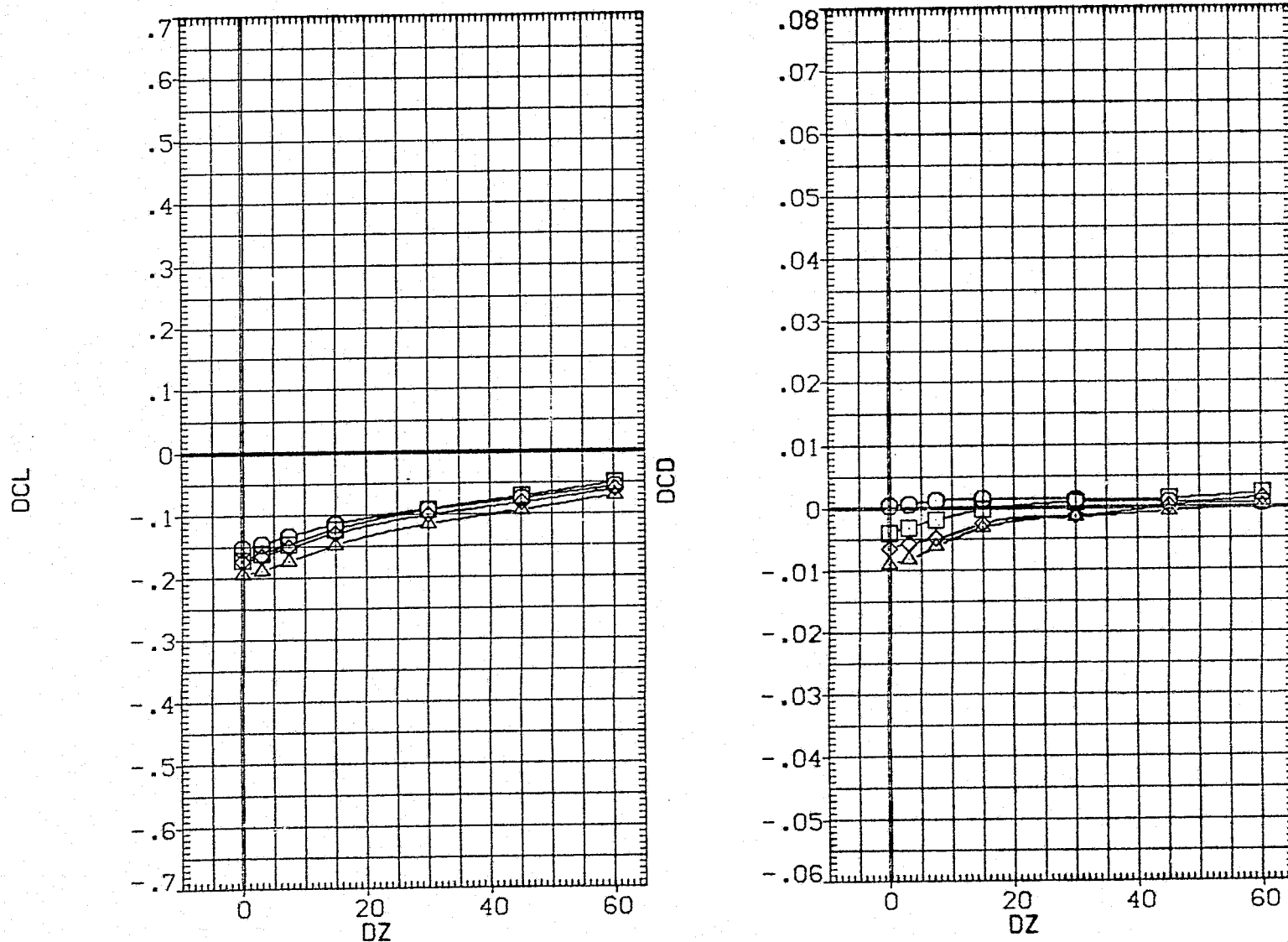


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
(KGN145)	CA20 (747/1 01 S1) - (747/1)	D/S (145 - 035)	.000	.000	4.000	.000	SREF	5500.0000 SQ.FT.
(KGN052)	CA20 (747/1 01 S1) - (747/1)	D/S (052 - 035)	5.000	.000	4.000	.000	LREF	327.7800 IN.
(KGN149)	CA20 (747/1 01 S1) - (747/1)	D/S (149 - 035)	5.000	.000	4.000	.000	BREF	2348.0400 IN.
(KGN146)	CA20 (747/1 01 S1) - (747/1)	D/S (146 - 035)	10.000	.000	4.000	.000	XMRP	1339.9000 IN.XC
							YMRP	.0000 IN.YC
							ZMRP	190.8000 IN.ZC
							SCALE	.0300

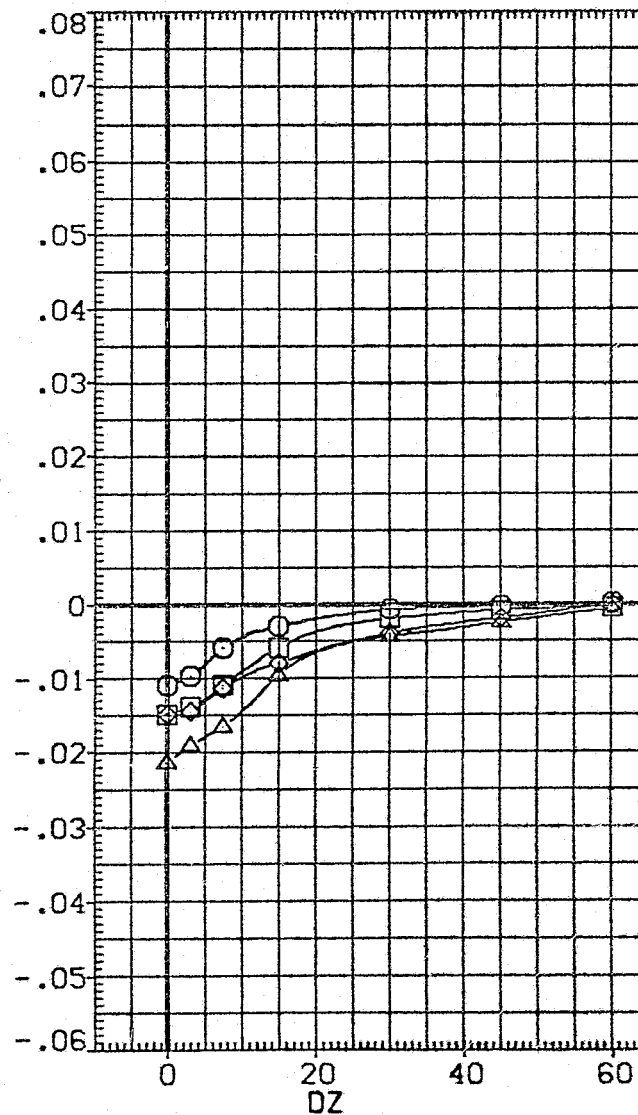
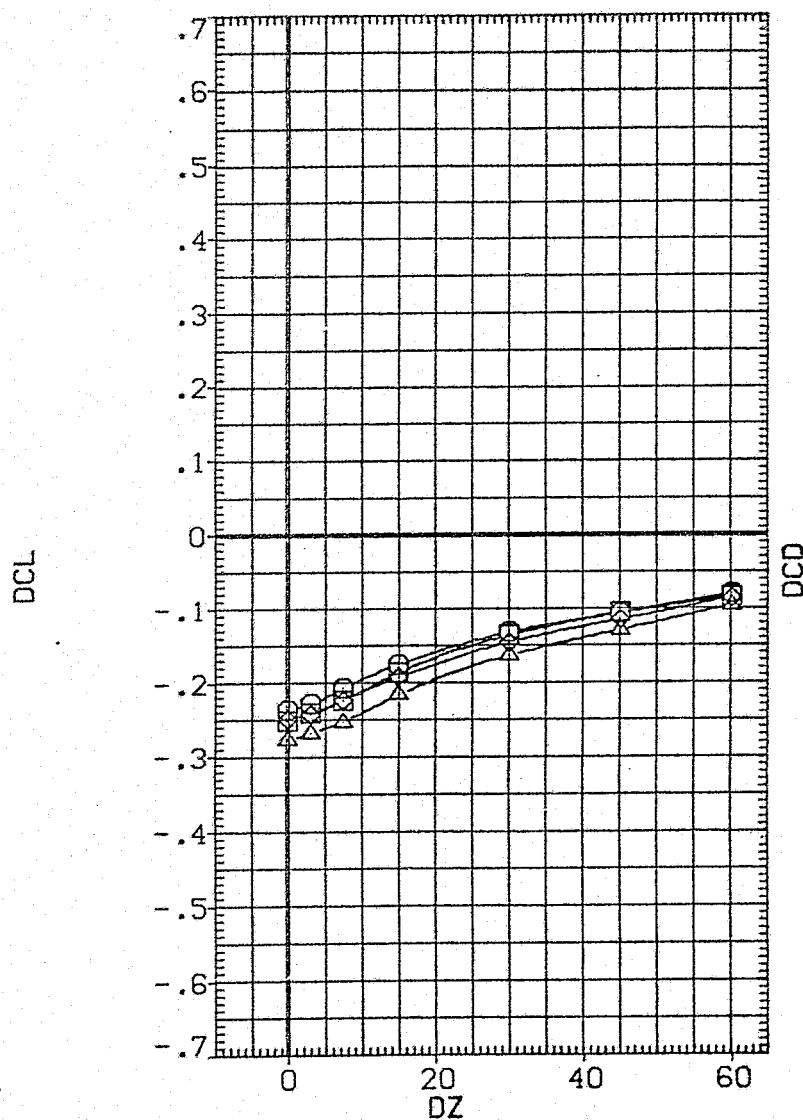


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
(KGN145)	DATA NOT AVAILABLE	.000	.000	4.000	.000	SREF	5500.0000	50.FT.
(KGN052)	CA20 (747/1 01 S1) - (747/1)	5.000	.000	4.000	.000	LREF	327.7800	IN.
(KGN149)	DATA NOT AVAILABLE	5.000	.000	4.000	.000	BREF	2348.0400	IN.
(KGN146)	DATA NOT AVAILABLE	10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
						YMRP	.0000	IN.YC
						ZMRP	190.8000	IN.ZC
						SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DC LM

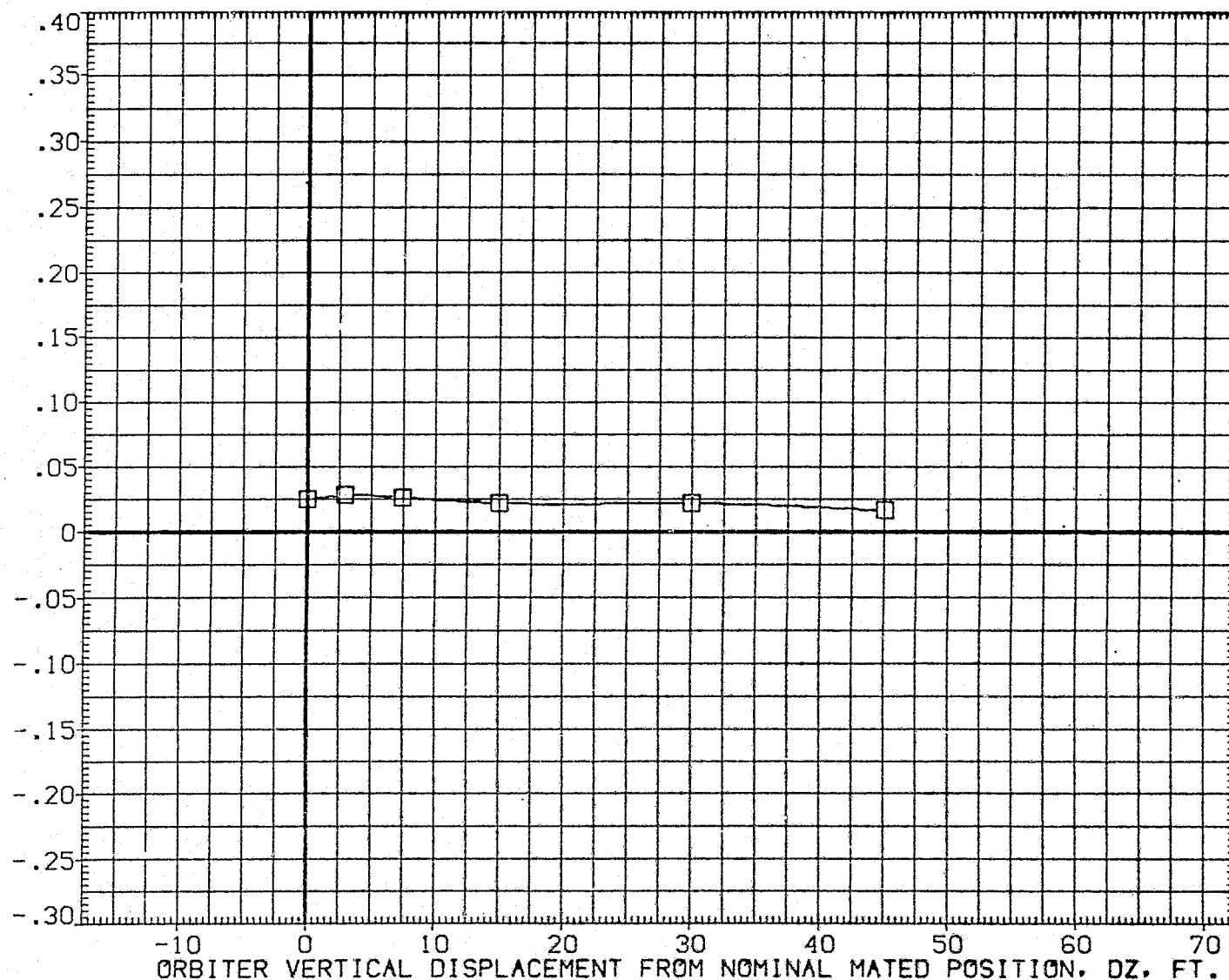


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
(KGN145)	CA20 (747/1 01 S1) - (747/1)	D/S (145 - 035)	.000	.000	4.000	.000	SREF	5500.0000 50.FT.
(KGN032)	CA20 (747/1 01 S1) - (747/1)	D/S (052 - 035)	5.000	.000	4.000	.000	LREF	327.7800 IN.
(KGN148)	CA20 (747/1 01 S1) - (747/1)	D/S (148 - 035)	5.000	.000	4.000	.000	BREF	2348.0400 IN.
(KGN146)	CA20 (747/1 01 S1) - (747/1)	D/S (146 - 035)	10.000	.000	4.000	.000	XMRP	1339.9000 IN.XC
							YMRP	.0000 IN.YC
							ZMRP	190.8000 IN.ZC
							SCALE	.0300

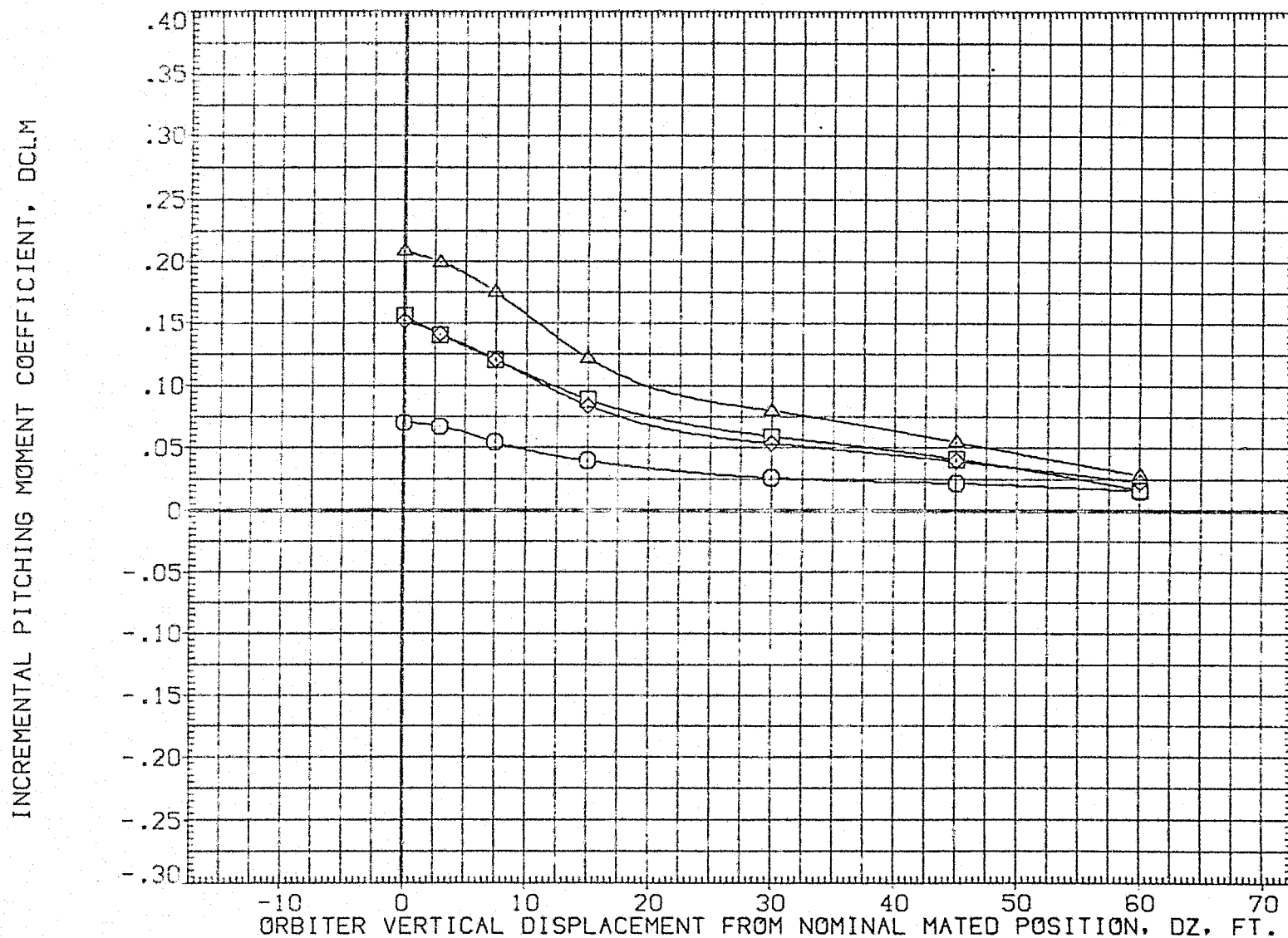


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION	D/S	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
(KGN145)	○	CA20 (747/1 01 S1) - (747/1)	D/S (145 - 035)	.000	.000	4.000	.000	SREF	5500.0000	50.FT.
(KGN052)	□	CA20 (747/1 01 S1) - (747/1)	D/S (052 - 035)	5.000	.000	4.000	.000	LREF	327.7800	IN.
(KGN149)	◇	CA20 (747/1 01 S1) - (747/1)	D/S (149 - 035)	5.000	.000	4.000	.000	BREF	2348.0400	IN.
(KGN146)	△	CA2U (747/1 01 S1) - (747/1)	D/S (146 - 035)	10.000	.000	4.000	.000	XMRP	1339.9000	IN.XC
								YMRP	.0000	IN.YC
								ZMRP	190.8000	IN.ZC
								SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

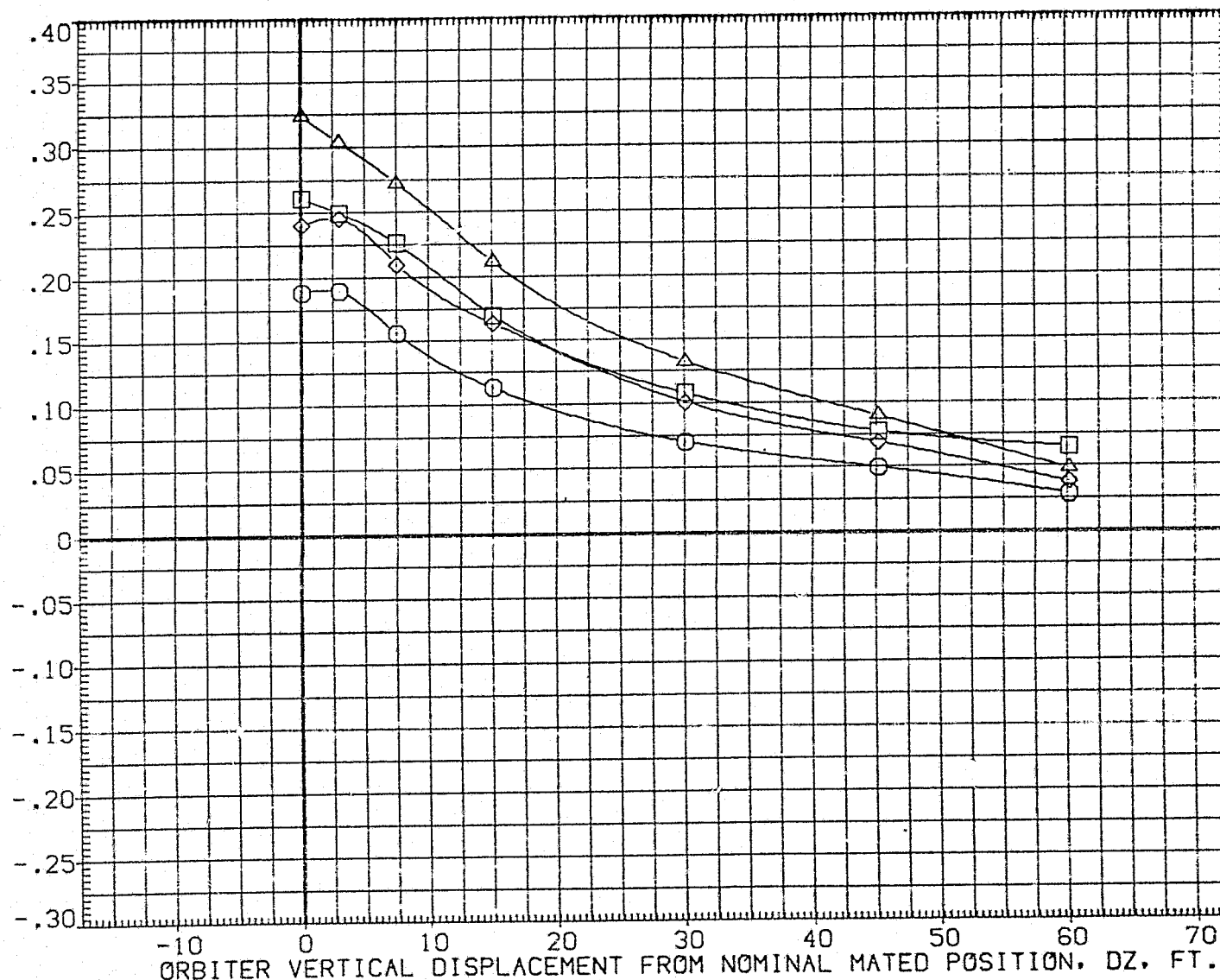


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00 PAGE 1692

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(KGN145)	DATA NOT AVAILABLE
(KGN052)	CA20 (747/1 01 S1) - (747/1)
(KGN149)	DATA NOT AVAILABLE
(KGN146)	DATA NOT AVAILABLE

D/S (052 - 035)

ELEVON	AILRON	ALPHAC
.000	.000	4.000
5.000	.000	4.000
5.000	.000	4.000
10.000	.000	4.000

DX

REFERENCE INFORMATION

	SREF	5500.0000	50.FT.
LREF	327.7800	IN.	
BREF	2343.0400	IN.	
XMRP	1339.9000	IN.XC	
YMRP	.0000	IN.YC	
ZMRP	190.8000	IN.ZC	
SCALE	.0300		

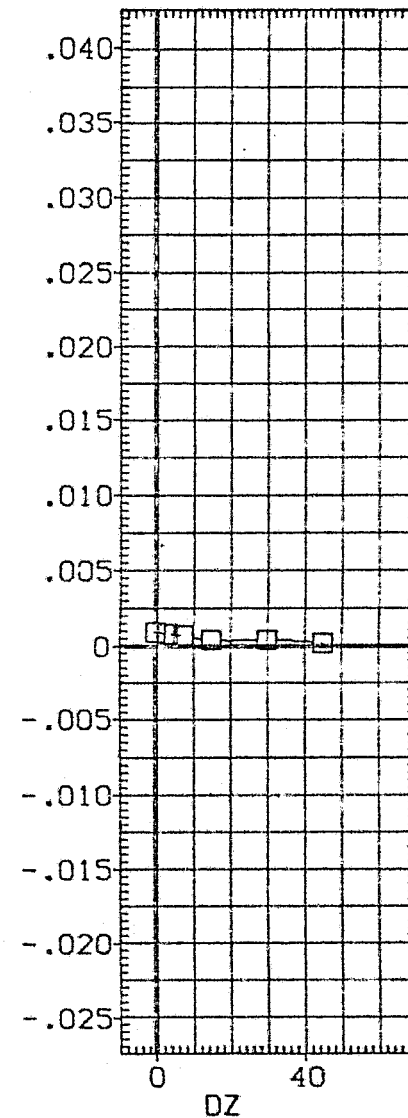
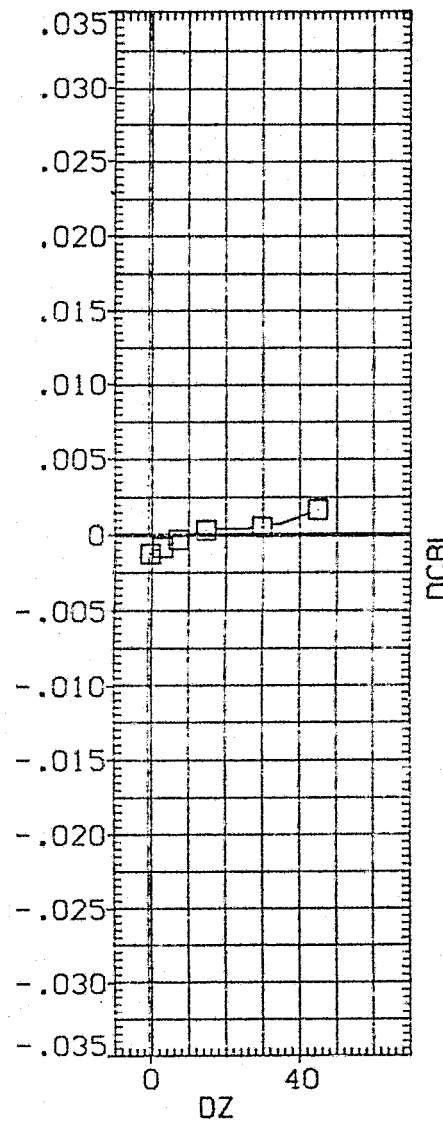
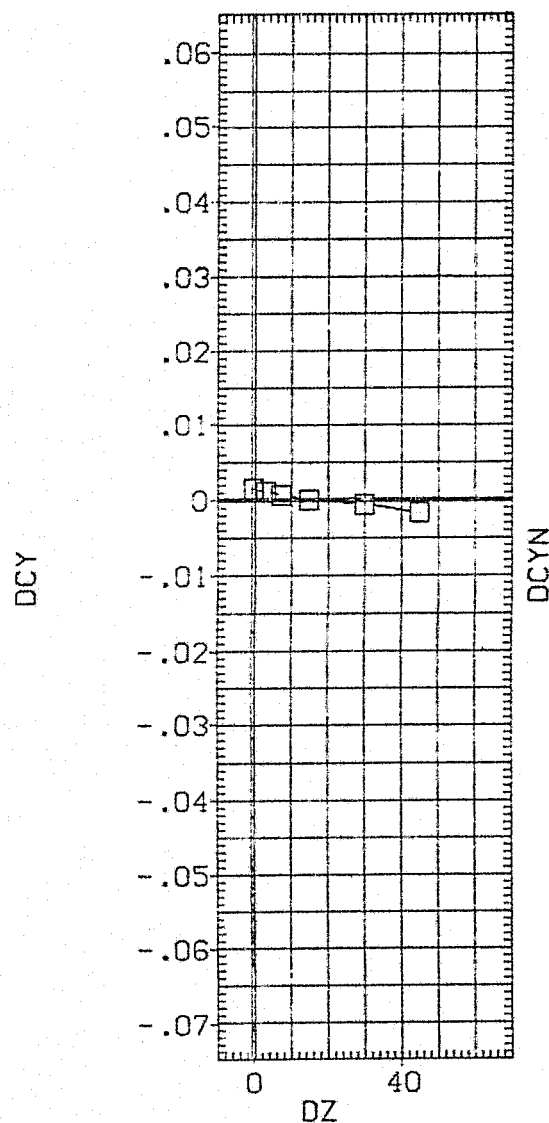


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A)ALPHA0= 6.00

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(KGN145)	□	CA20	(747/1 01 S1) - (747/1)
(KGN052)	○	CA20	(747/1 01 S1) - (747/1)
(KGN149)	×	CA20	(747/1 01 S1) - (747/1)
(KGN146)	△	CA20	(747/1 01 S1) - (747/1)

D/S	ELEVON	ATLRON	ALPHAC	DX
(145 - 035)	.000	.000	4.000	.000
(052 - 035)	5.000	.000	4.000	.000
(149 - 035)	5.000	.000	4.000	.000
(146 - 035)	10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

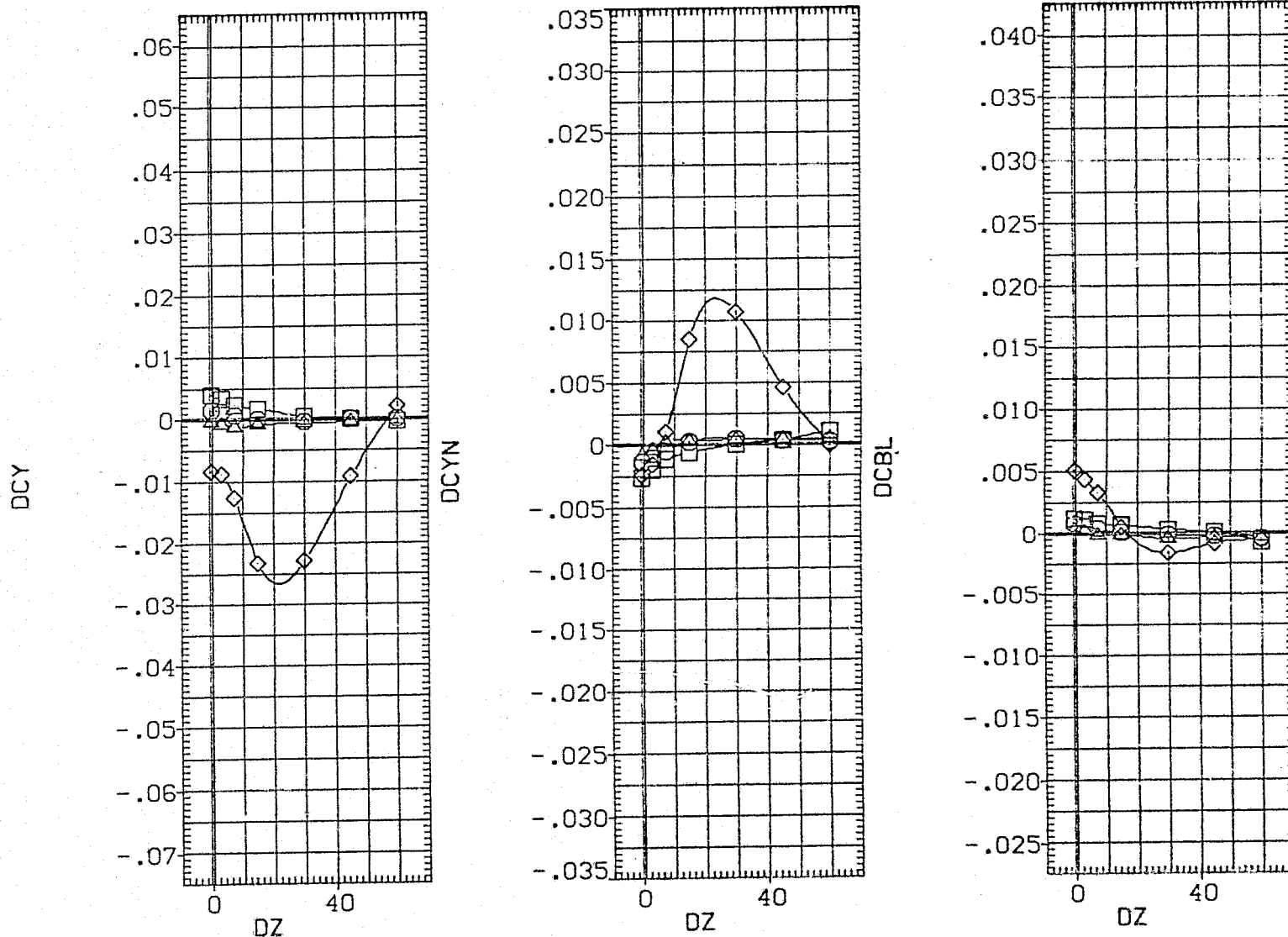


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(KGN145)	CA20 (747/1 01 S1) - (747/1)
(KGN052)	CA20 (747/1 01 S1) - (747/1)
(KGN149)	CA20 (747/1 01 S1) - (747/1)
(KGN146)	CA20 (747/1 01 S1) - (747/1)

	ELEVON	AILRON	ALPHAC
D/S (145 - 035)	.000	.000	4.000
D/S (052 - 035)	5.000	.000	4.000
D/S (149 - 035)	5.000	.000	4.000
D/S (146 - 035)	10.000	.000	4.000

REFERENCE INFORMATION		
DX	SREF	5500.0000 SQ.FT.
	LREF	327.7800 IN.
	BREF	2348.0400 IN.
	XMRP	1339.9000 IN.XC
	YMRP	.0000 IN.YC
	ZMRP	199.8000 IN.ZC
	SCALE	.0300

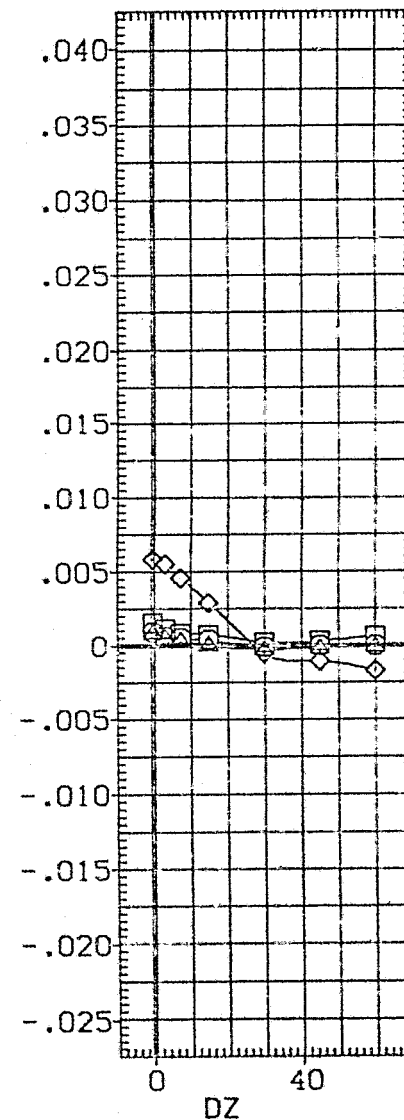
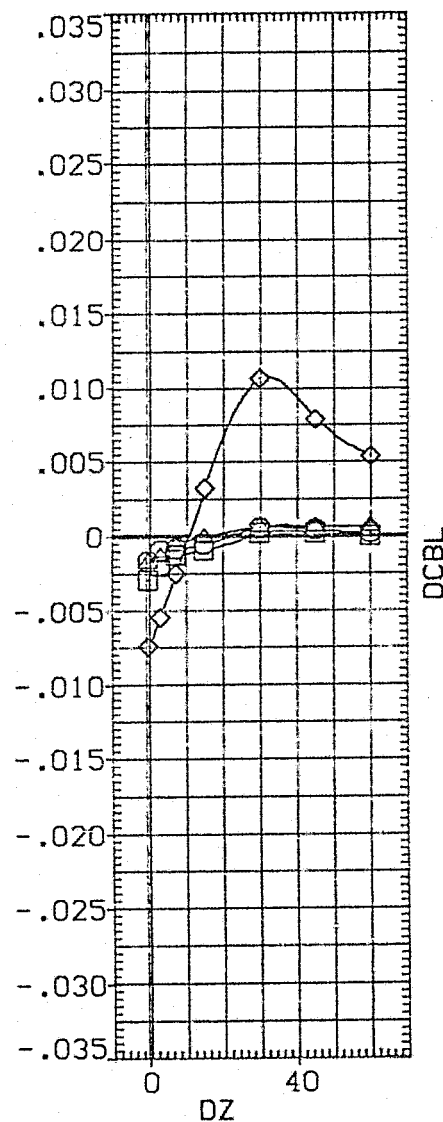
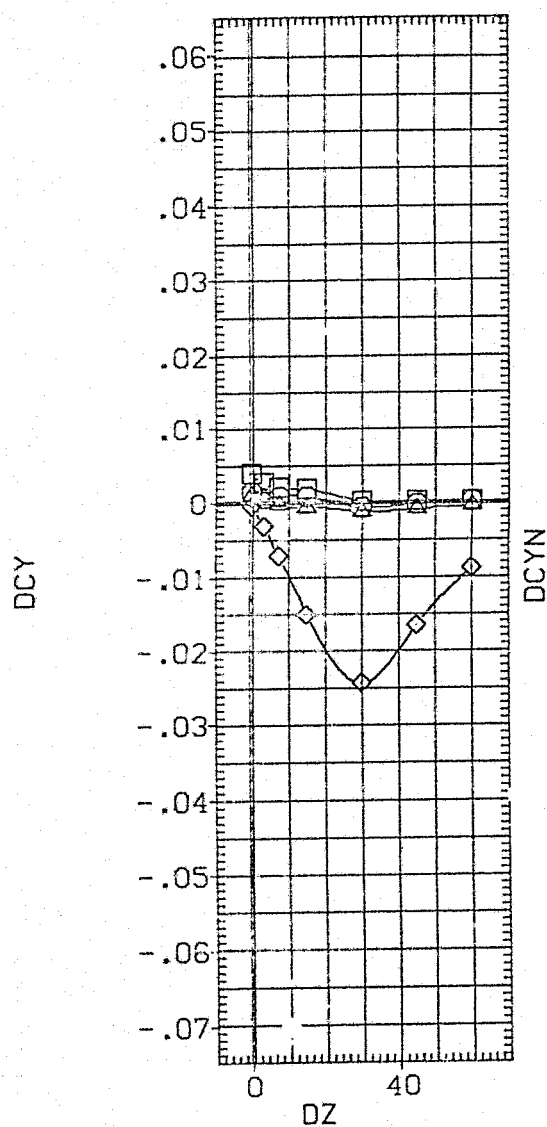


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(KGN145)	DATA NOT AVAILABLE
(KGN052)	CA20 (747/1 01 S1) - (747/1)
(KGN149)	DATA NOT AVAILABLE
(KGN146)	DATA NOT AVAILABLE

D/S (052 - 035)

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	5500.0000	50.FT.
5.000	.000	4.000	.000	LREF	327.7800	IN.
5.000	.000	4.000	.000	BREF	2348.0400	IN.
10.000	.000	4.000	.000	XMRP	1339.9000	IN.YC
				YMRP	.0000	IN.YC
				ZMRP	190.8000	IN.ZC
				SCALE	.0300	

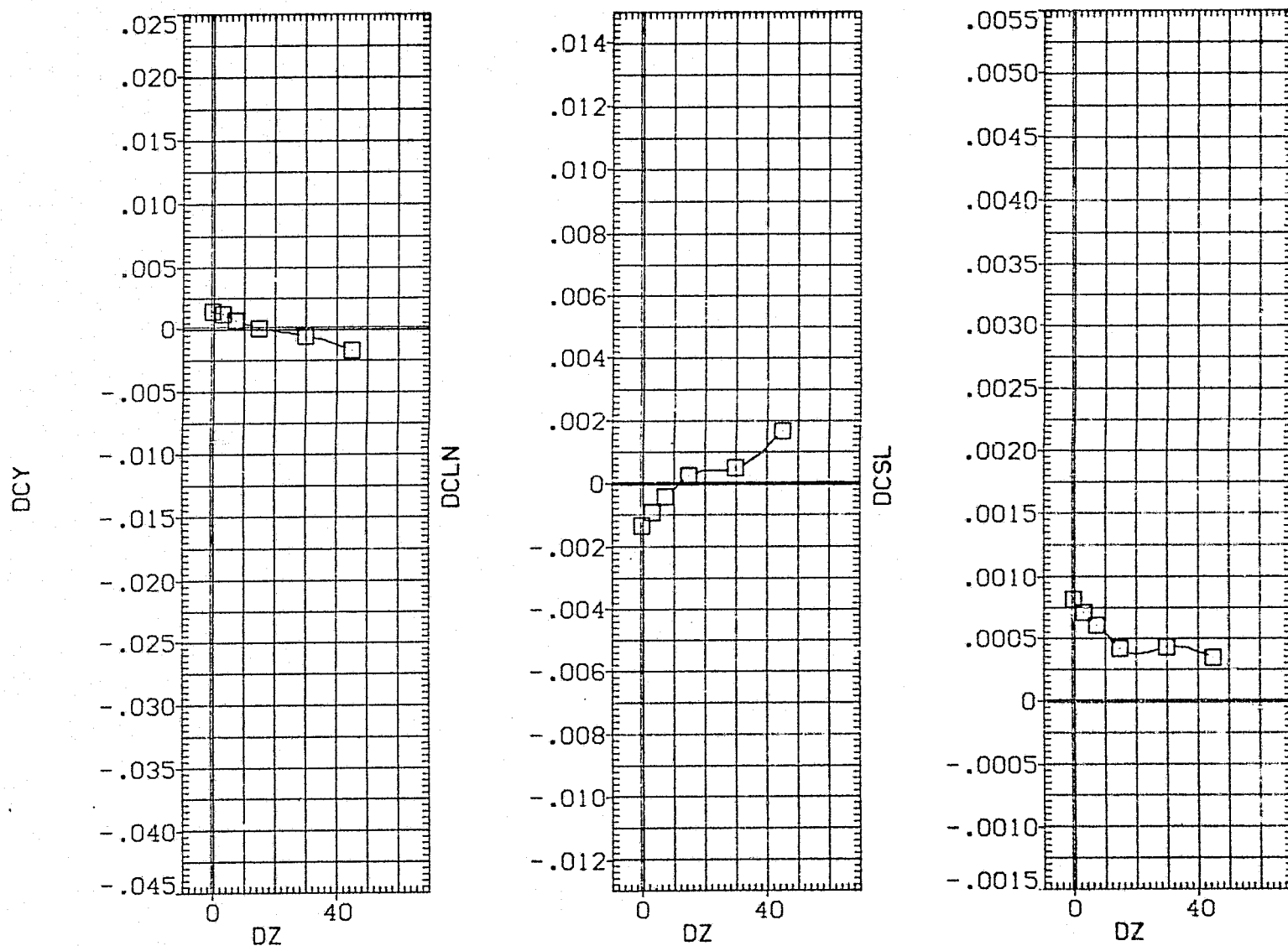


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A)ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	D/S	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION
(KGN145)	CA20 (747/1 01 S1) - (747/1)	D/S (145 - 035)	.000	.000	4.000	.000	SREF 5500.0000 SQ.FT.
(KGN052)	CA20 (747/1 01 S1) - (747/1)	D/S (052 - 035)	5.000	.000	4.000	.000	LREF 327.7800 IN.
(KGN149)	CA20 (747/1 01 S1) - (747/1)	D/S (149 - 035)	5.000	.000	4.000	.000	BREF 2348.0400 IN.
(KGN146)	CA20 (747/1 01 S1) - (747/1)	D/S (146 - 035)	10.000	.000	4.000	.000	XMRP 1339.9000 IN.XC
							YMRP .0000 IN.YC
							ZMRP 190.8000 IN.ZC
							SCALE .0300

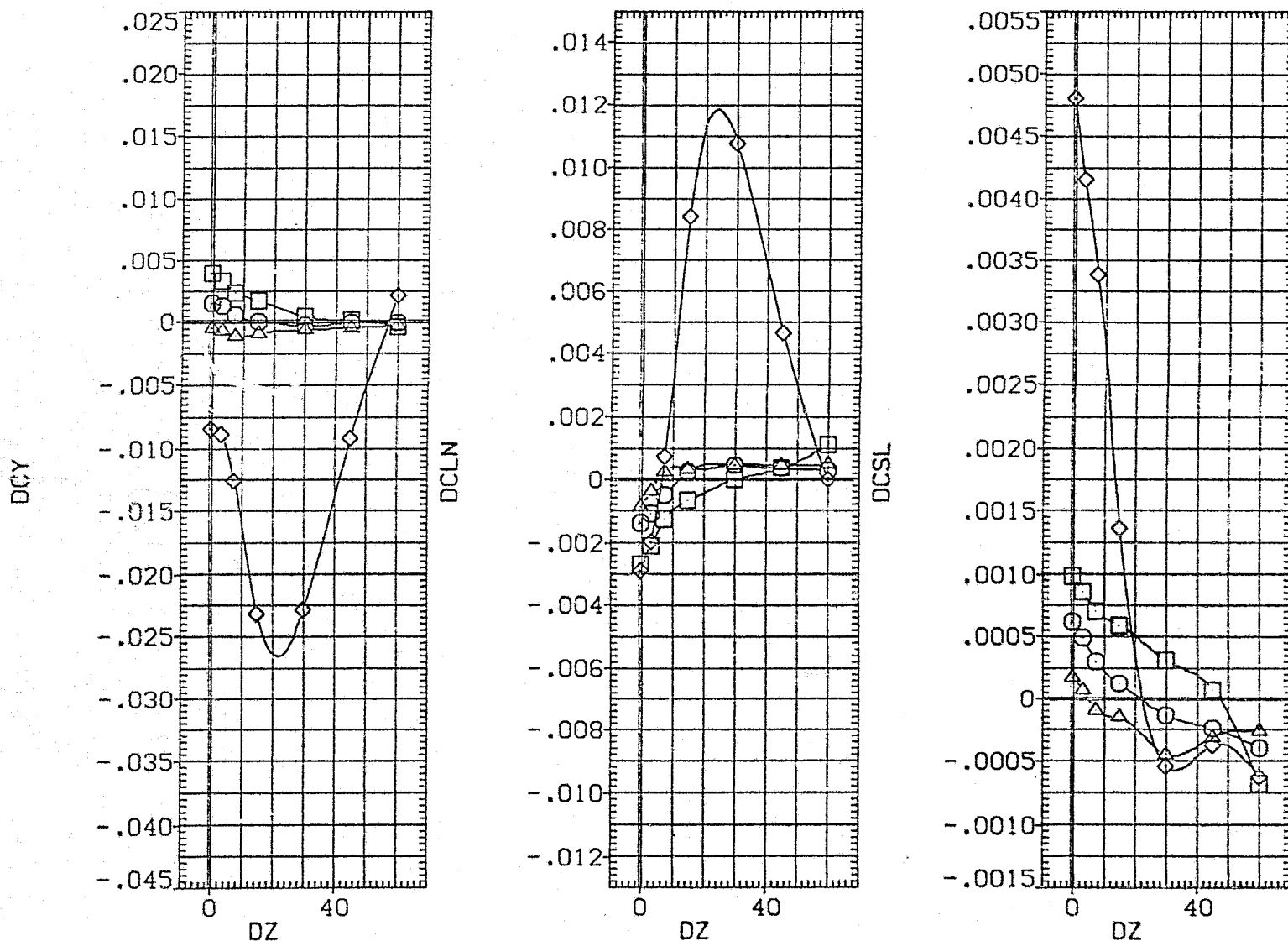


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(KGN145)	□	CA20	(747/1 01 S1) - (747/1)
(KGN052)	○	CA20	(747/1 01 S1) - (747/1)
(KGN149)	◇	CA20	(747/1 01 S1) - (747/1)
(KGN146)	△	CA20	(747/1 01 S1) - (747/1)

D/S	ELEVON	AILRON	ALPHAC	DX
(145 - 035)	.000	.000	4.000	.000
(052 - 035)	5.000	.000	4.000	.000
(149 - 035)	5.000	.000	4.000	.000
(146 - 035)	10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

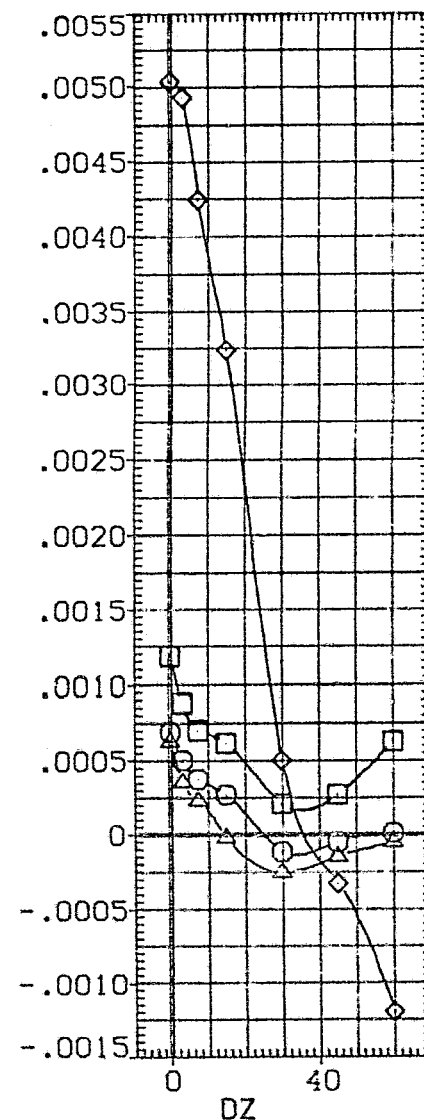
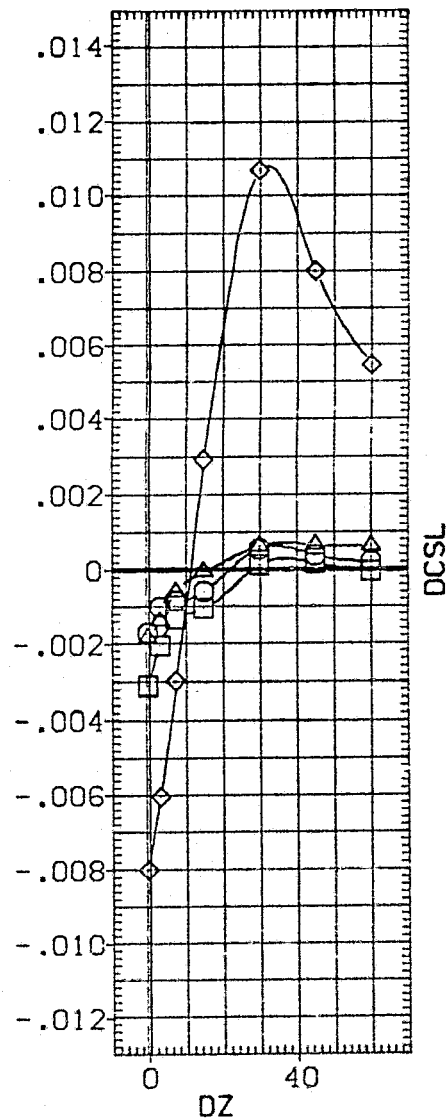
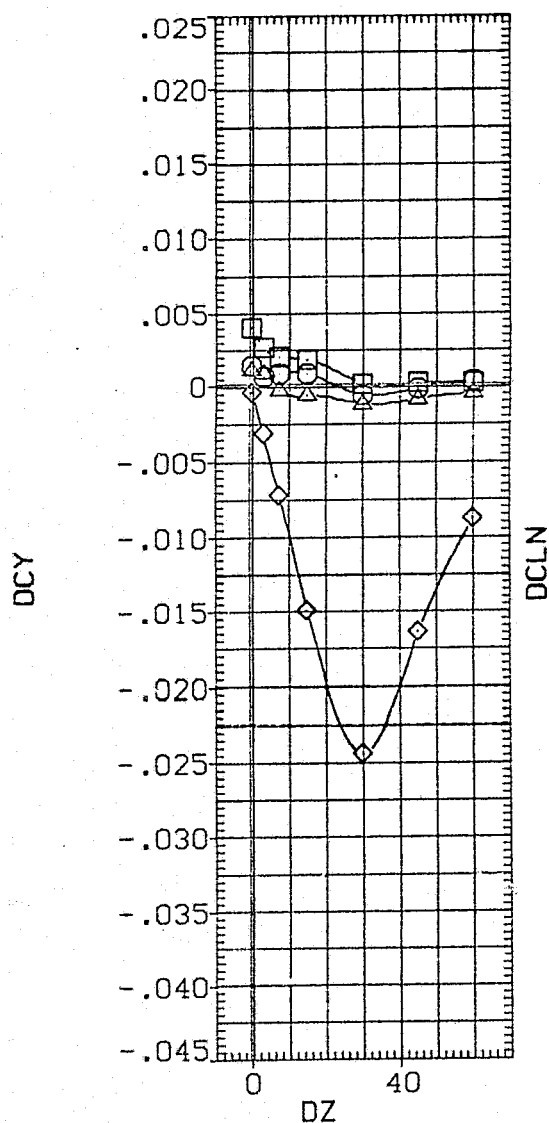


FIG 36 ELEVON EFFECTS ON CARRIER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)

(C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN145)	DATA NOT AVAILABLE
(JGN052)	CA20 747/1 01 SI
(JGN149)	DATA NOT AVAILABLE
(JGN146)	DATA NOT AVAILABLE

ORBITER DATA

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION
.000	.000	4.000	.000	SREF 2690.0000 50.FT.
5.000	.000	4.000	.000	LREF 474.8100 IN.
5.000	-10.000	4.000	.000	BREF 936.6800 IN.
10.000	.000	4.000	.000	XMRP 1109.0000 IN.X0
				YMRP .0000 IN.Y0
				ZMRP 375.0000 IN.Z0
				SCALE .0300

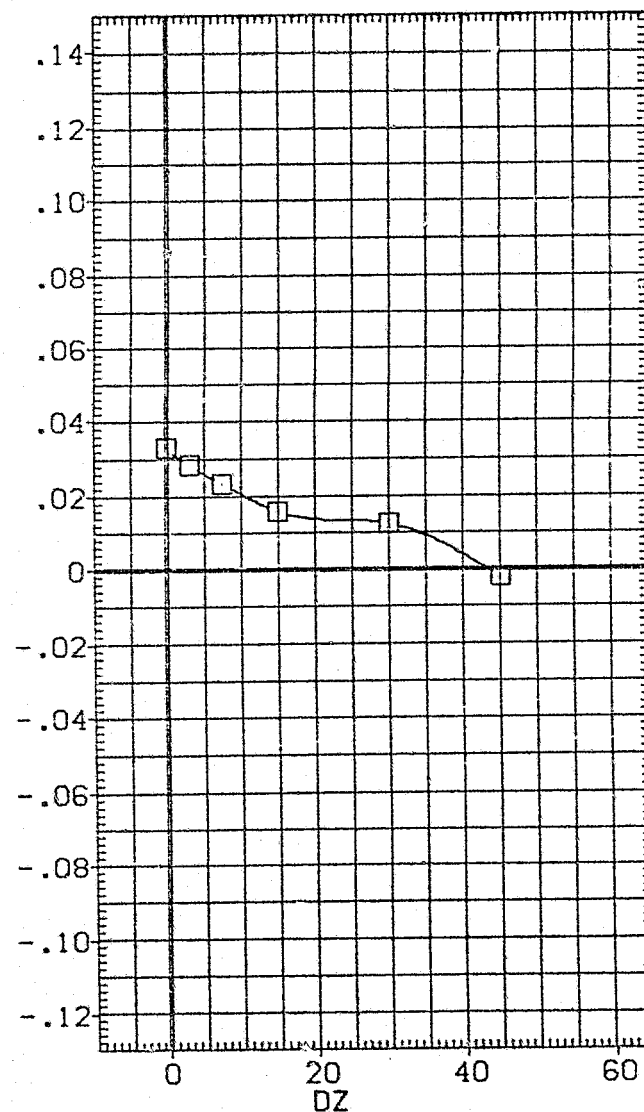
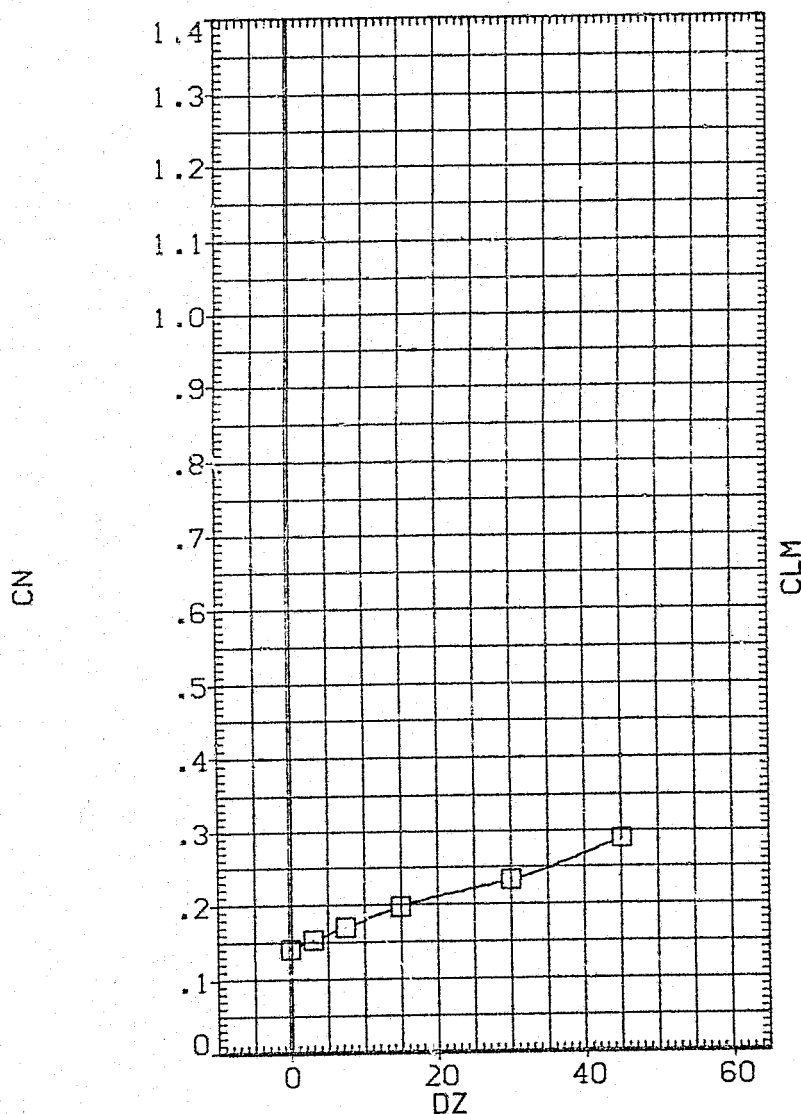


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHAC = 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN145)	CA20 747/1 01 S1
(JGN052)	CA20 747/1 01 S1
(JGN149)	CA20 747/1 01 S1
(JGN146)	CA20 747/1 01 S1

ORBITER DATA
ORBITER DATA
ORBITER DATA
ORBITER DATA

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION
.000	.000	4.000	.000	SREF 2690.0000 SQ.FT.
5.000	.000	4.000	.000	LREF 474.8100 IN.
5.000	-10.000	4.000	.000	BREF 936.6800 IN.
10.000	.000	4.000	.000	XMRP 1109.0000 IN.XC
				YMRP .0000 IN.YO
				ZMRP 375.0000 IN.ZO
				SCALE .0300

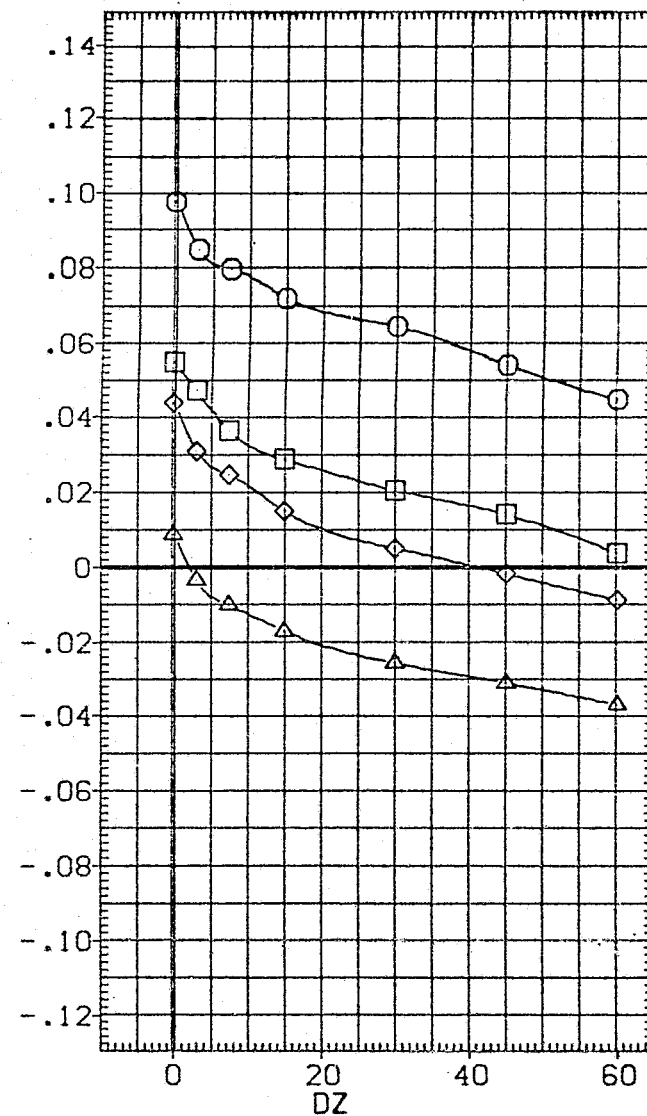
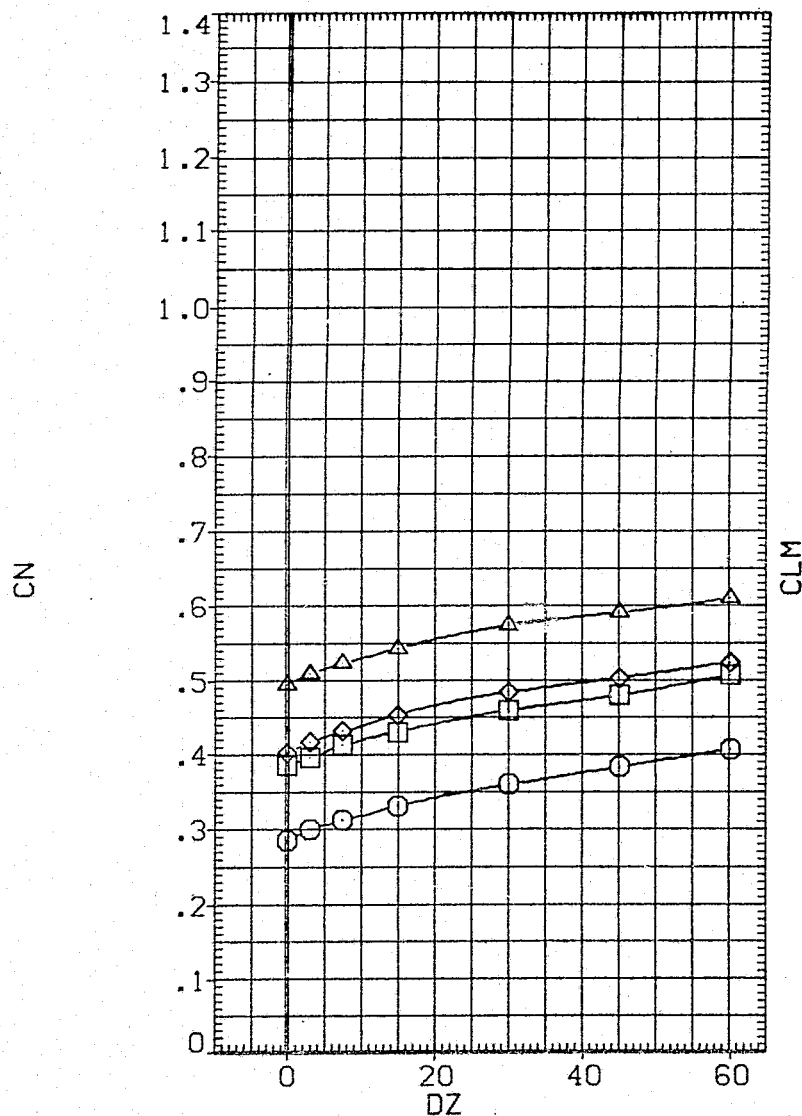


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN145)	CA20 747/1 01 S1
(JGN052)	CA20 747/1 01 S1
(JGN149)	CA20 747/1 01 S1
(JGN146)	CA20 747/1 01 S1

ORBITER DATA
ORBITER DATA
ORBITER DATA
ORBITER DATA

ELEVON	AIRLON	ALPHAC	DX	REFERENCE INFORMATION
.000	.000	4.000	.000	SREF 2690.0000 SC.FT.
5.000	.000	4.000	.000	LREF 474.8100 IN.
5.000	-10.000	4.000	.000	BREF 936.6800 IN.
10.000	.000	4.000	.000	XMRP 1109.0000 IN.X0
				YMRP .0000 IN.Y0
				ZMRP 375.0000 IN.Z0
				SCALE .0300

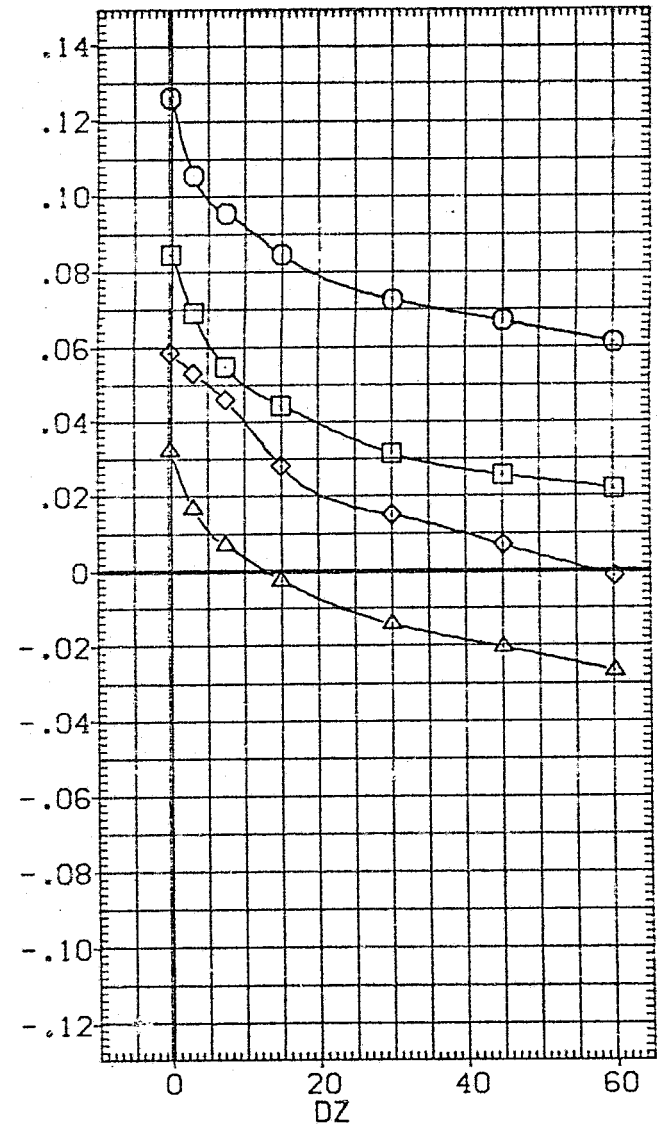
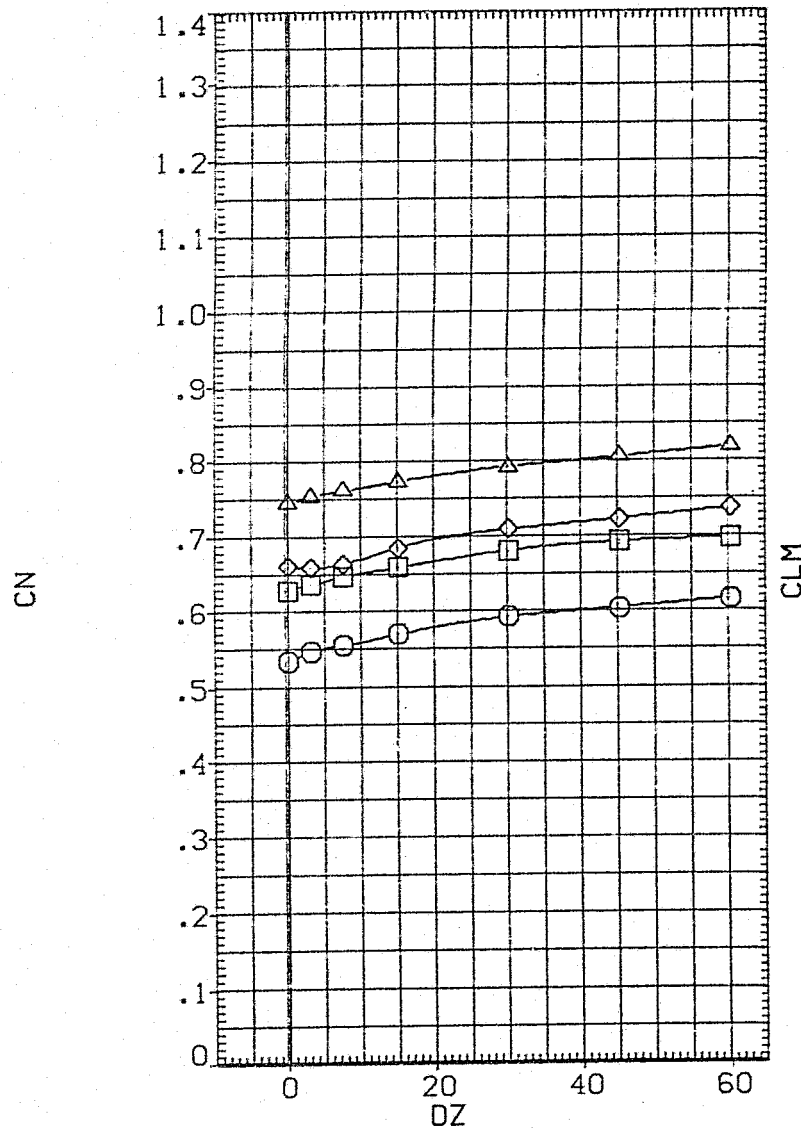


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(JGN145)	○	DATA NOT AVAILABLE
(JGN052)	□	CA20 747/1 01 S1
(JGN149)	◇	DATA NOT AVAILABLE
(JGN146)	△	DATA NOT AVAILABLE

ORBITER DATA

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	2690.0000	SQ.FT.
5.000	.000	4.000	.000	LREF	474.8100	IN.
5.000	-10.000	4.000	.000	BREF	936.6800	IN.
10.000	.000	4.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

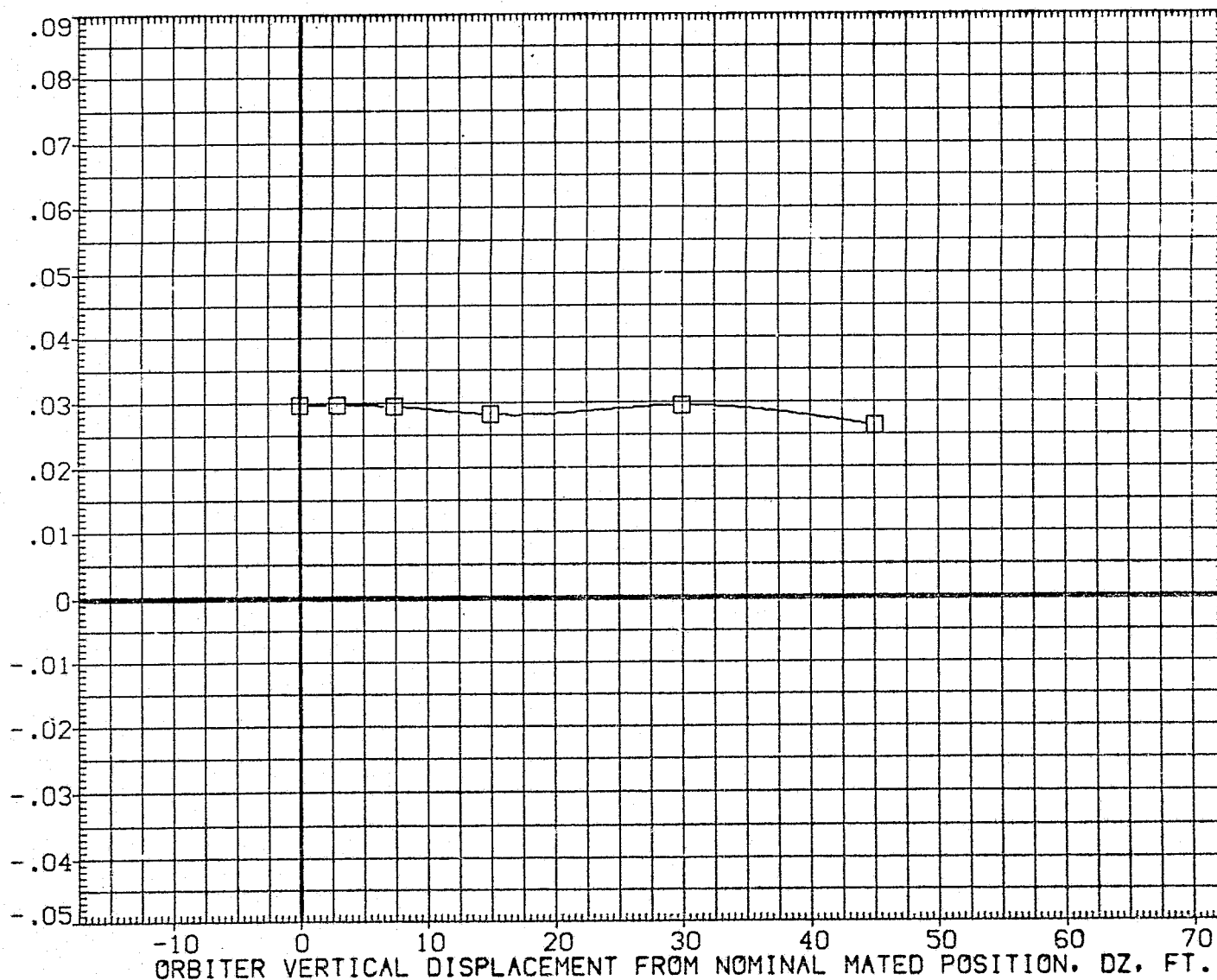


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (A) $\alpha = 6.00$ PAGE 1702

DATA SET SYMBOL	CONFIGURATION DESCRIPTION		ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION	
(JGN145)	CA20 747/1 01 S1	ORBITER DATA	.000	.000	4.000	.000	SREF	2690.0000 SQ.FT.
(JGN052)	CA20 747/1 01 S1	ORBITER DATA	5.000	.000	4.000	.000	LREF	474.8100 IN.
(JGN149)	CA20 747/1 01 S1	ORBITER DATA	5.000	-10.000	4.000	.000	BREF	936.6800 IN.
(JGN146)	CA20 747/1 01 S1	ORBITER DATA	10.000	.000	4.000	.000	XMRP	1109.0000 IN.X0
							YMRP	.0000 IN.Y0
							ZMRP	375.0000 IN.Z0
							SCALE	.0300

AXIAL FORCE COEFFICIENT, CA

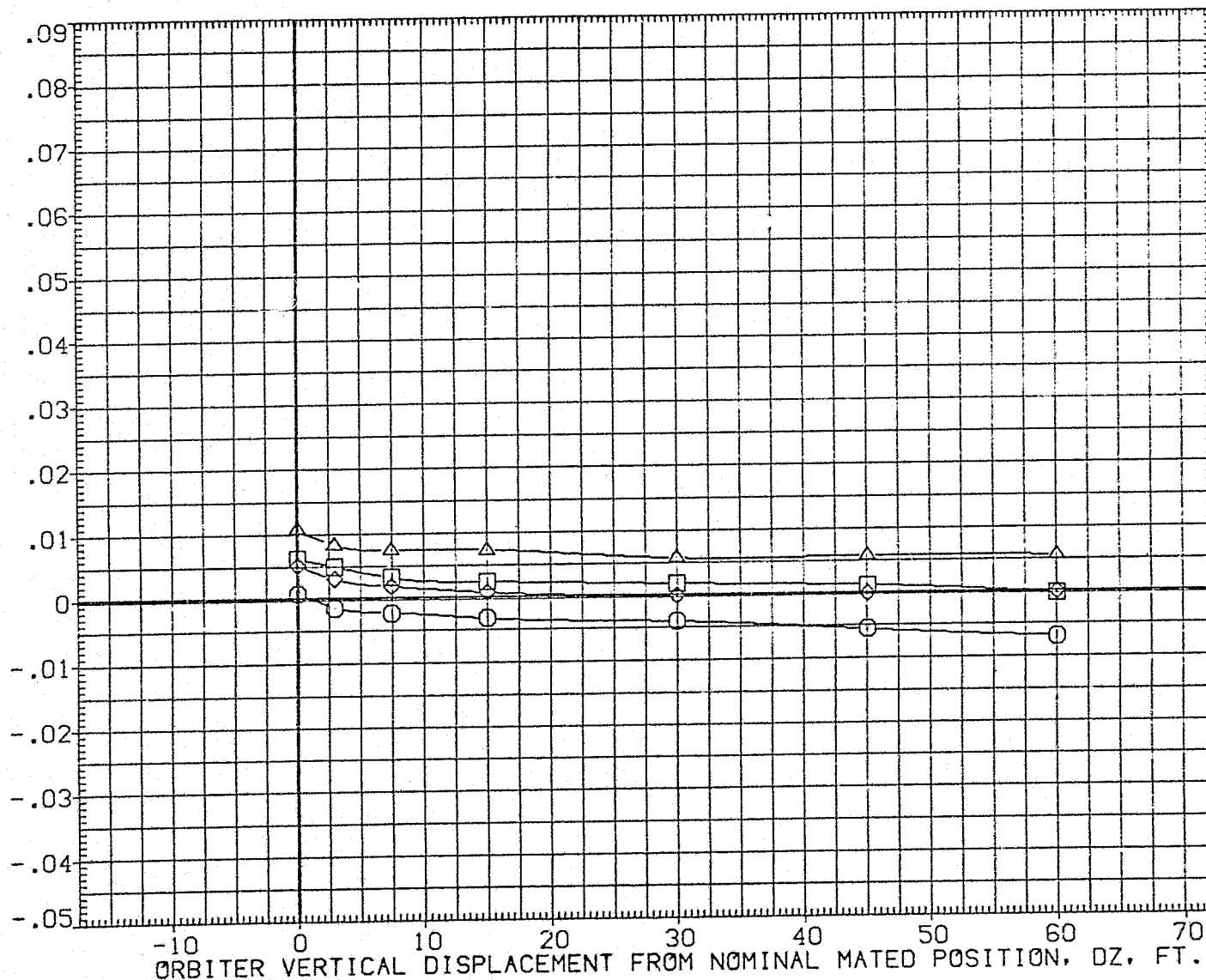


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN145)	CA20 747/1 01 S1
(JGN052)	CA20 747/1 01 S1
(JGN149)	CA20 747/1 01 S1
(JGN146)	CA20 747/1 01 S1

ORBITER DATA
ORBITER DATA
ORBITER DATA
ORBITER DATA

ELEVON	AILRON	ALPHAC	DX
.000	.000	4.000	.000
5.000	.000	4.000	.000
5.000	-10.000	4.000	.000
10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

AXIAL FORCE COEFFICIENT, CA

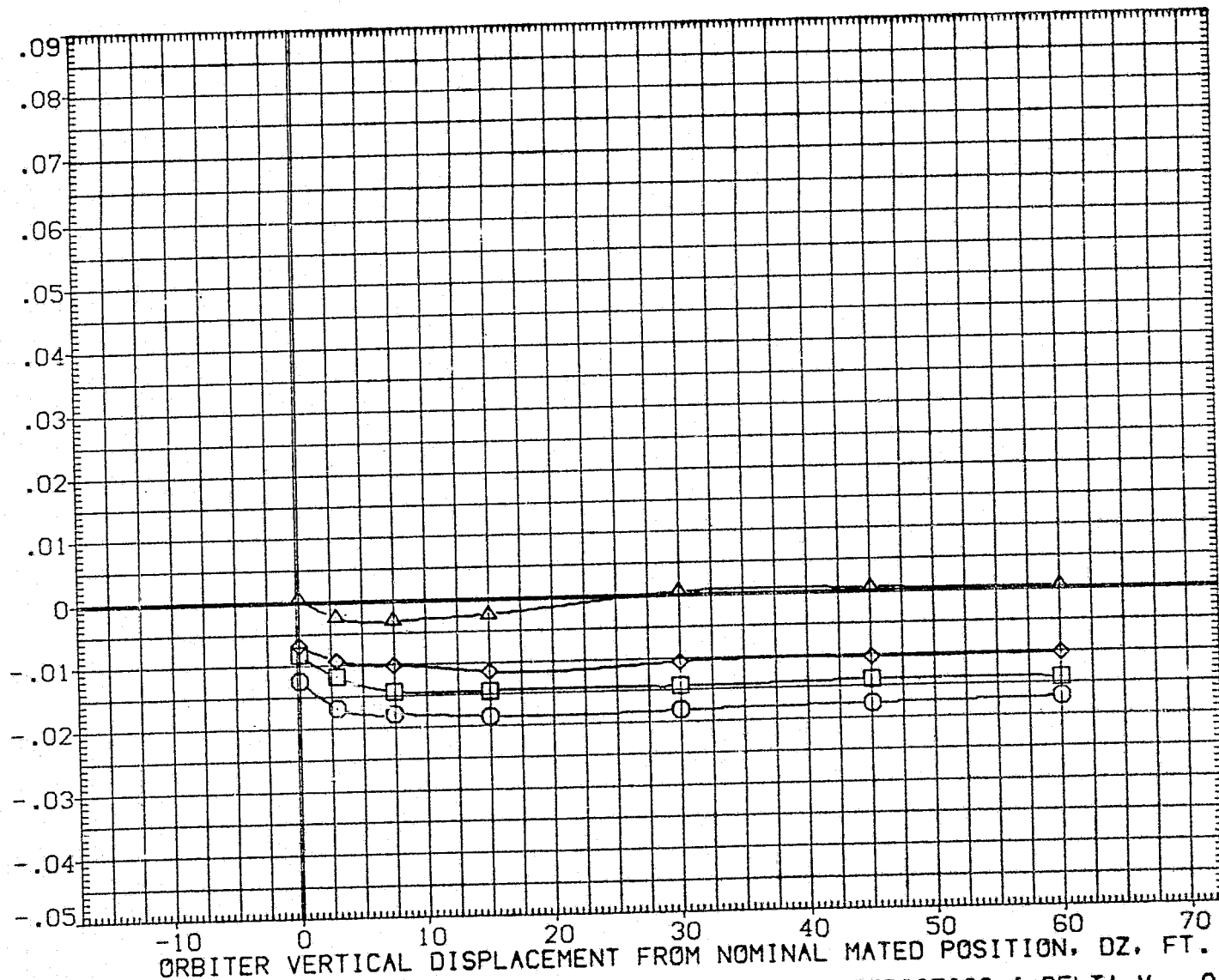


FIG 37

ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)

(C)ALPHA0= 14.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(JGN145) ○ DATA NOT AVAILABLE

(JGN052) □ CA2G 747/1 01 S1

(JGN149) ◇ DATA NOT AVAILABLE

(JGN146) △ DATA NOT AVAILABLE

ORBITER DATA

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	2690.0000	SQ.FT.
5.000	.000	4.000	.000	LREF	474.8100	IN.
5.000	-10.000	4.000	.000	BREF	936.6800	IN.
10.000	.000	4.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

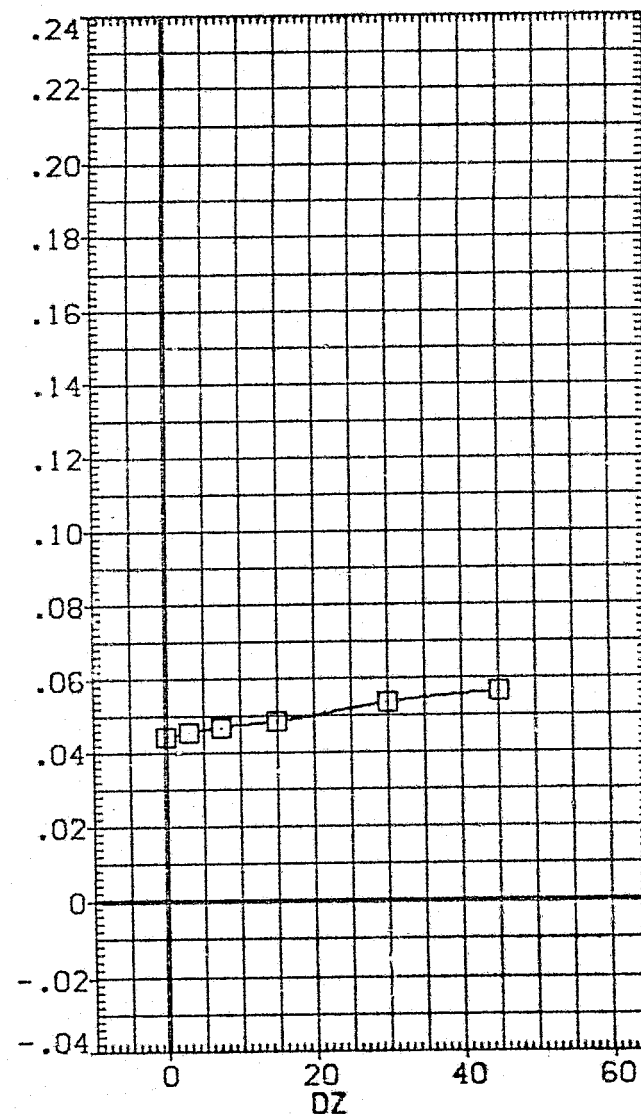
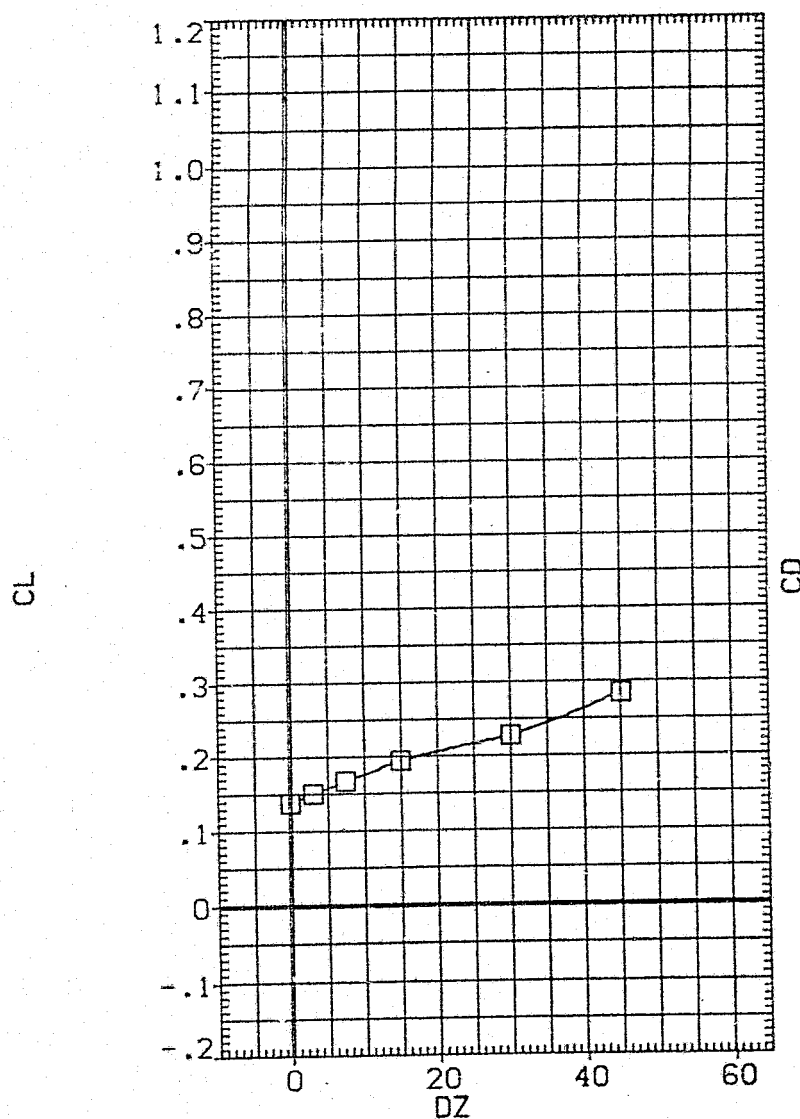


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)

(A)ALPHA0= 6.00

PAGE 1705

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN145)	CA20 747/1 01 S1
(JGN052)	CA20 747/1 01 S1
(JGN149)	CA20 747/1 01 S1
(JGN146)	CA20 747/1 01 S1

ORBITER DATA
ORBITER DATA
ORBITER DATA
ORBITER DATA

ELEVON	AILRON	ALPHAC	DX
.000	.000	4.000	.000
5.000	.000	4.000	.000
5.000	-10.000	4.000	.000
10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

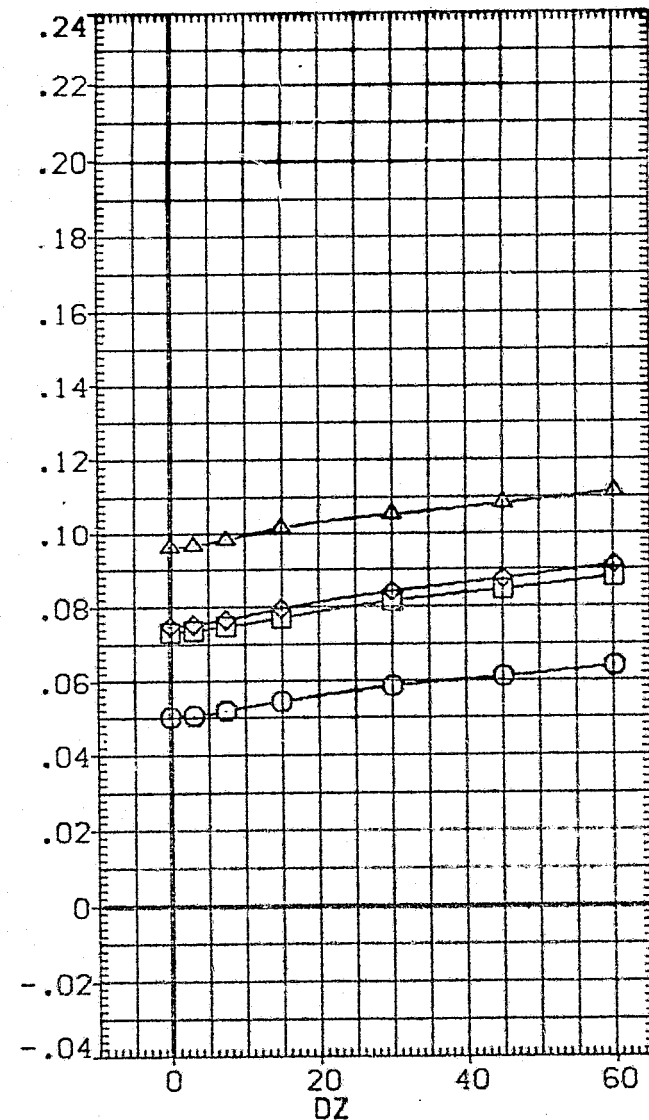
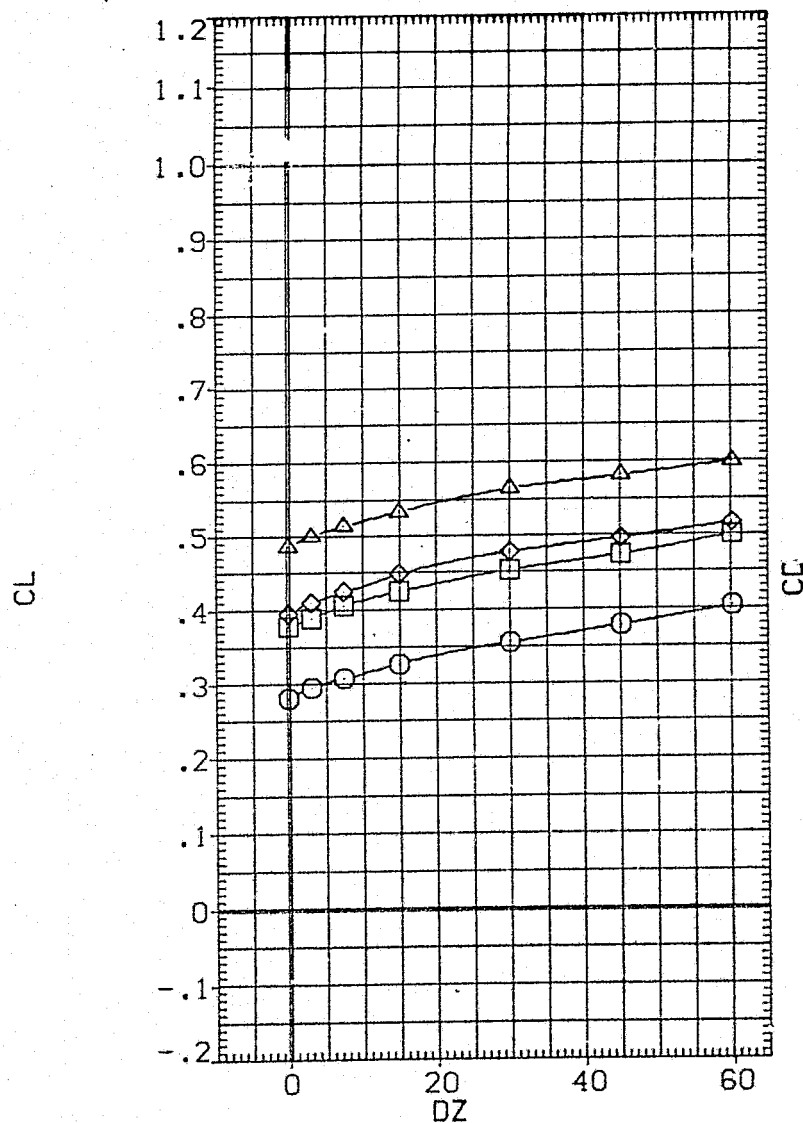


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(JGN145)	○	CA20	747/1 01 S1
(JGN052)	□	CA20	747/1 01 S1
(JGN149)	◇	CA20	747/1 01 S1
(JGN146)	△	CA20	747/1 01 S1

ORBITER DATA
ORBITER DATA
ORBITER DATA
ORBITER DATA

ELEVON	AIRLON	ALPHAC	DX	REFERENCE INFORMATION		
.030	.000	4.000	.000	SREF	2690.0000	50.FT.
5.000	.000	4.000	.000	LREF	474.8100	IN.
5.000	-10.000	4.000	.000	BREF	936.6800	IN.
10.000	.000	4.000	.000	XMRP	1109.0000	IN.X9
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

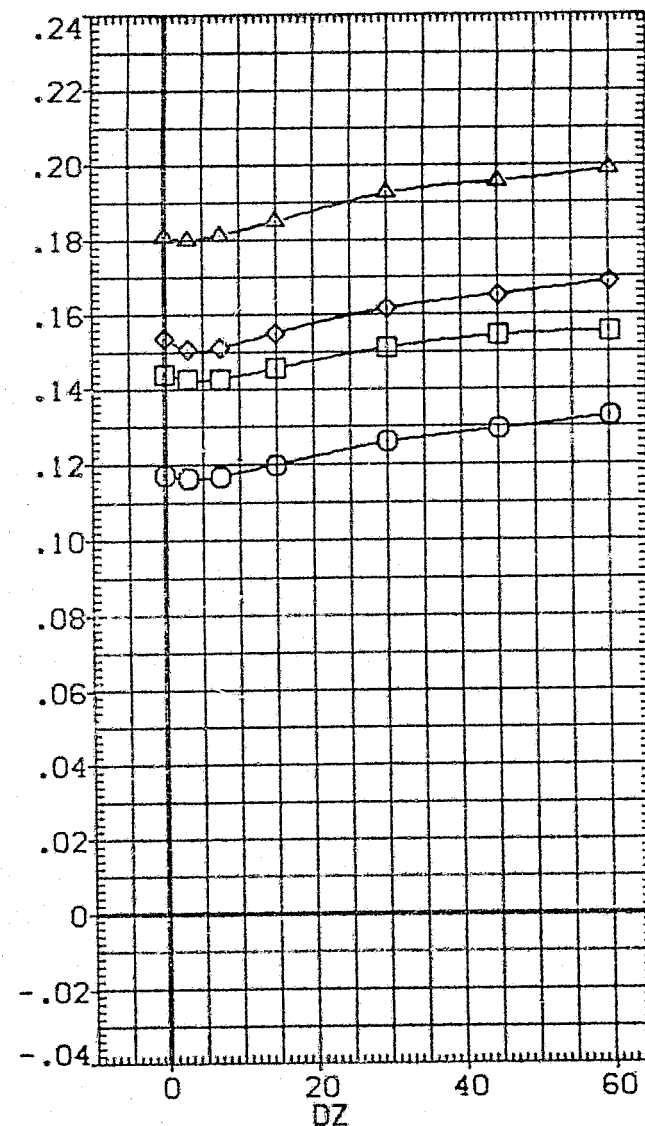
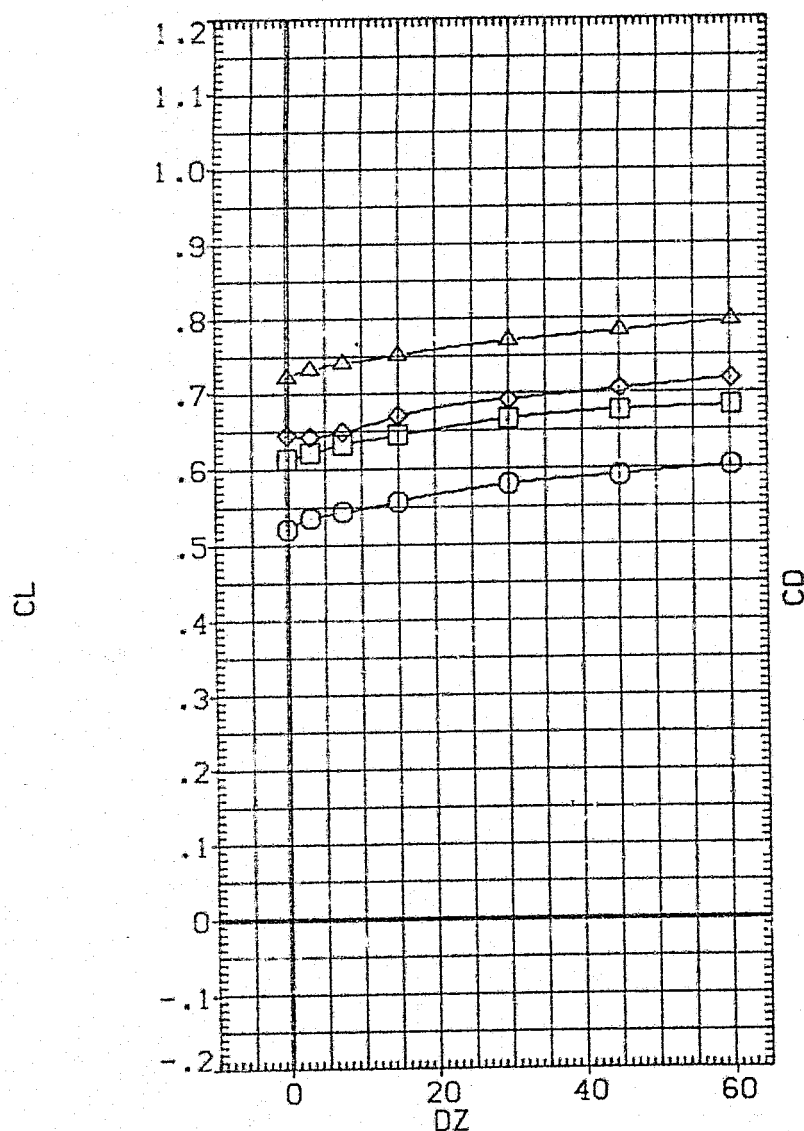


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS ($\Delta Y = 0$)
 (C)ALPHA0= 14.00

DATA SET	SYMBOL	CONFIGURATION DESCRIPTION
(JGN145)	□	DATA NOT AVAILABLE
(JGN052)	□	CA20 747/1 01 S1
(JGN149)	⊗	DATA NOT AVAILABLE
(JGN146)	△	DATA NOT AVAILABLE

	ELEVON	AILRON	ALPHA/C	DX
ORBITER DATA	.000	.000	4.000	.000
	5.000	.000	4.000	.000
	5.000	-10.000	4.000	.000
	10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

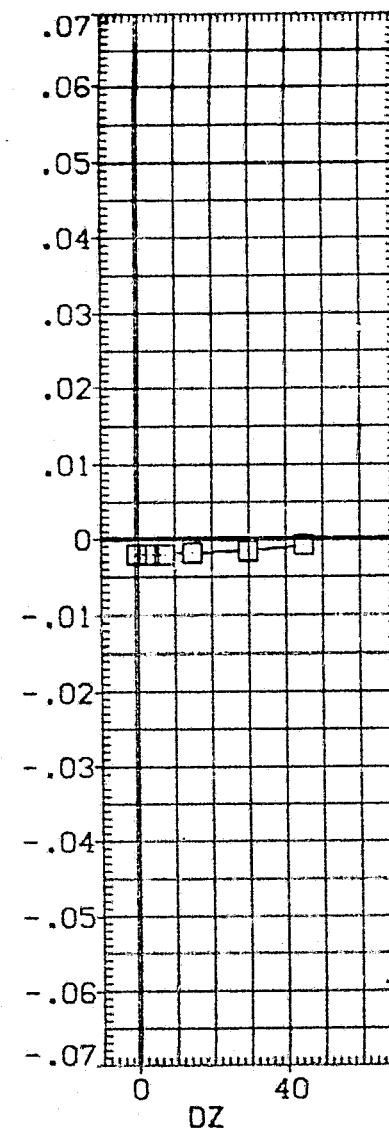
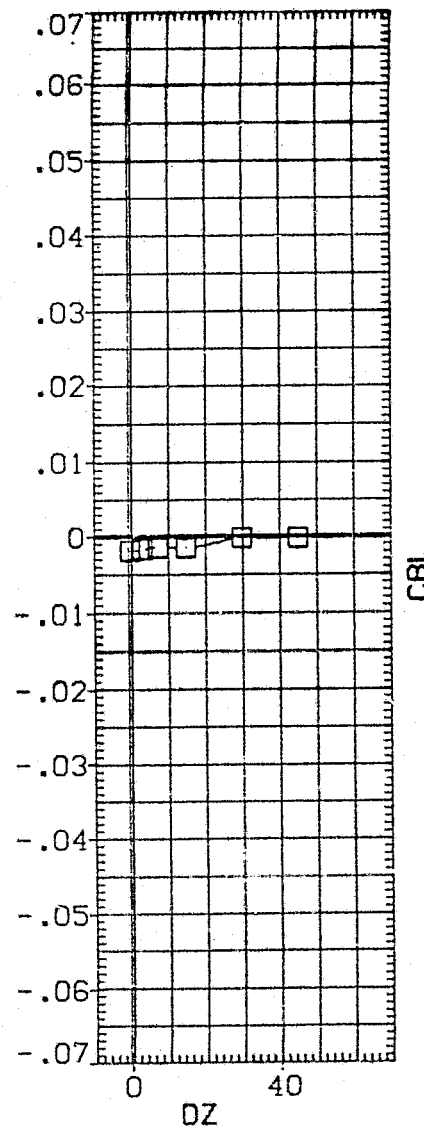
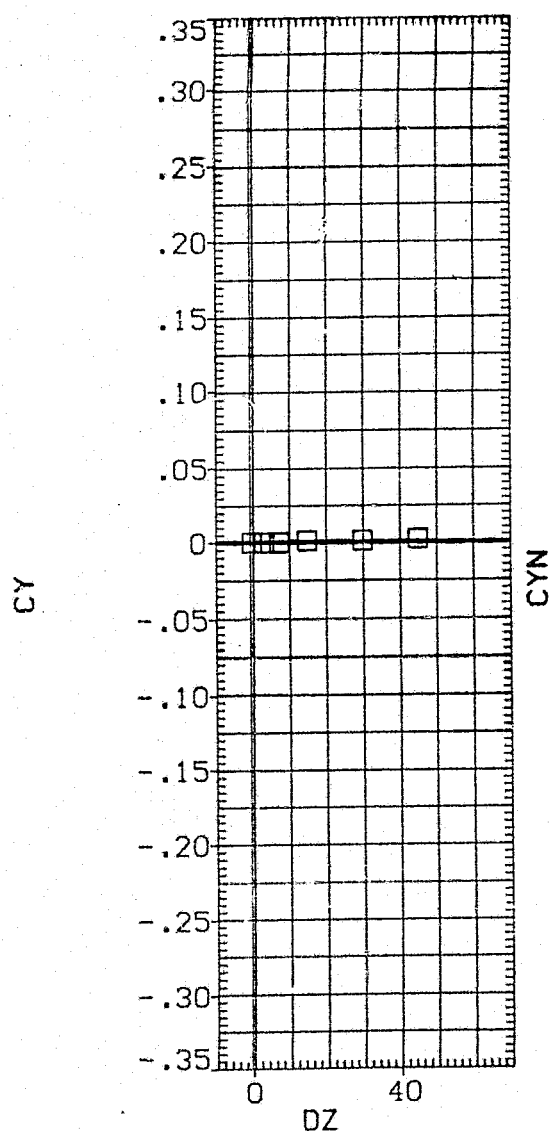


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0= 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(JGN145)	CA20 747/1 01 S1
(JGN052)	CA20 747/1 01 S1
(JGN149)	CA20 747/1 01 S1
(JGN146)	CA20 747/1 01 S1

	ELEVON	AIRON	ALPHAC	DX
ORBITER DATA	.000	.000	4.000	.000
ORBITER DATA	5.000	.000	4.000	.000
ORBITER DATA	5.000	-10.000	4.000	.000
ORBITER DATA	10.000	.000	4.000	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

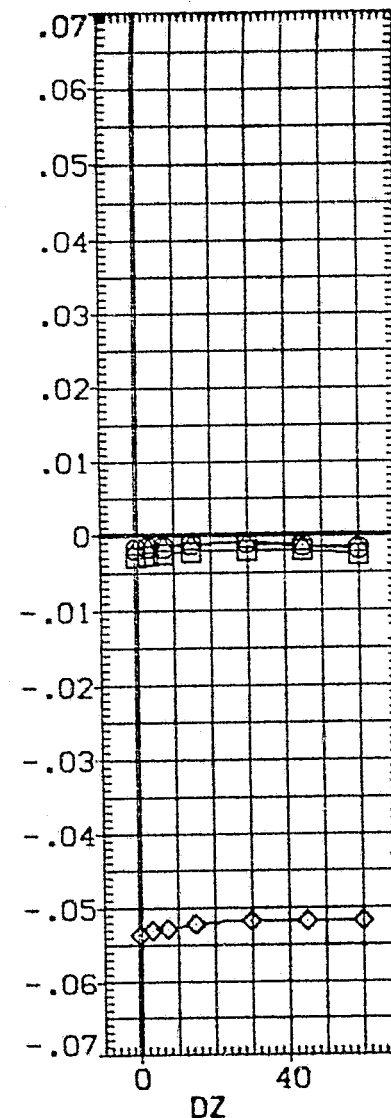
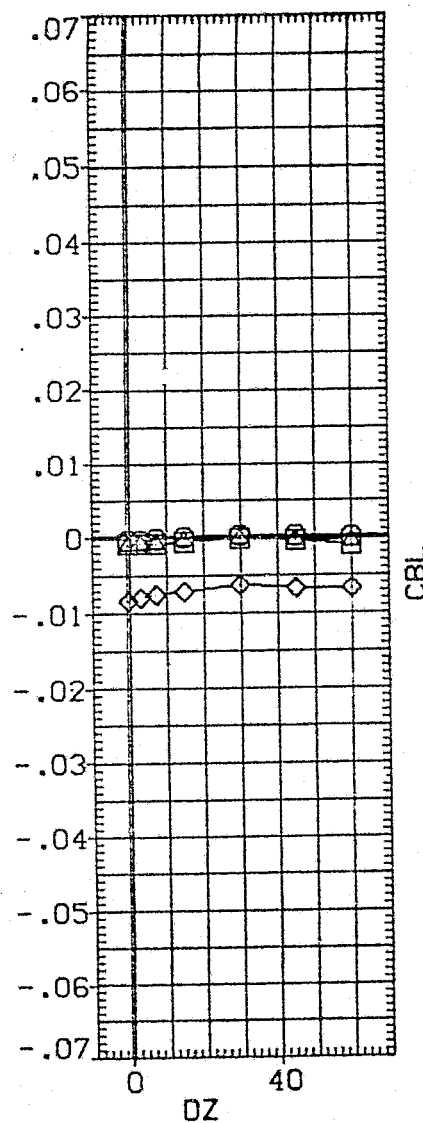
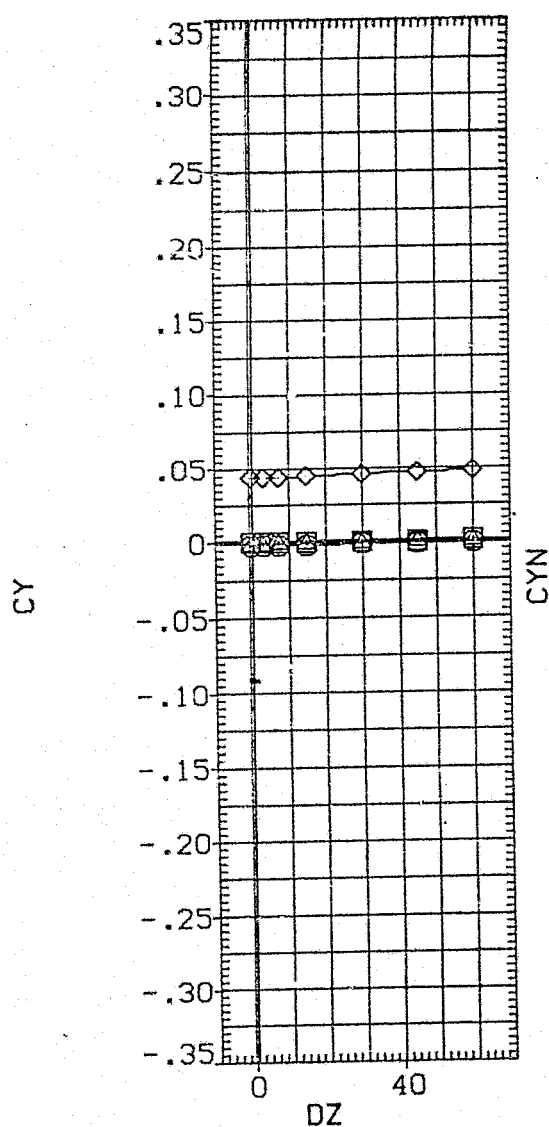


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET	SYMBOL	CONFIGURATION	DESCRIPTION
(JGN145)	□	CA20 747/1	01 S1
(JGN052)	□	CA20 747/1	01 S1
(JGN149)	△	CA20 747/1	01 S1
(JGN146)	△	CA20 747/1	01 S1

	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION
ORBITER DATA	.000	.000	4.000	.000	SREF 2650.0000 SQ.FT.
ORBITER DATA	5.000	.000	4.000	.000	LREF 474.8100 IN.
ORBITER DATA	5.000	-10.000	4.000	.000	BREF 936.6800 IN.
ORBITER DATA	10.000	.000	4.000	.000	XMRP 1109.0000 IN.X0
					YMRP .0000 IN.Y0
					ZMRP 375.0000 IN.Z0
					SCALE .0300

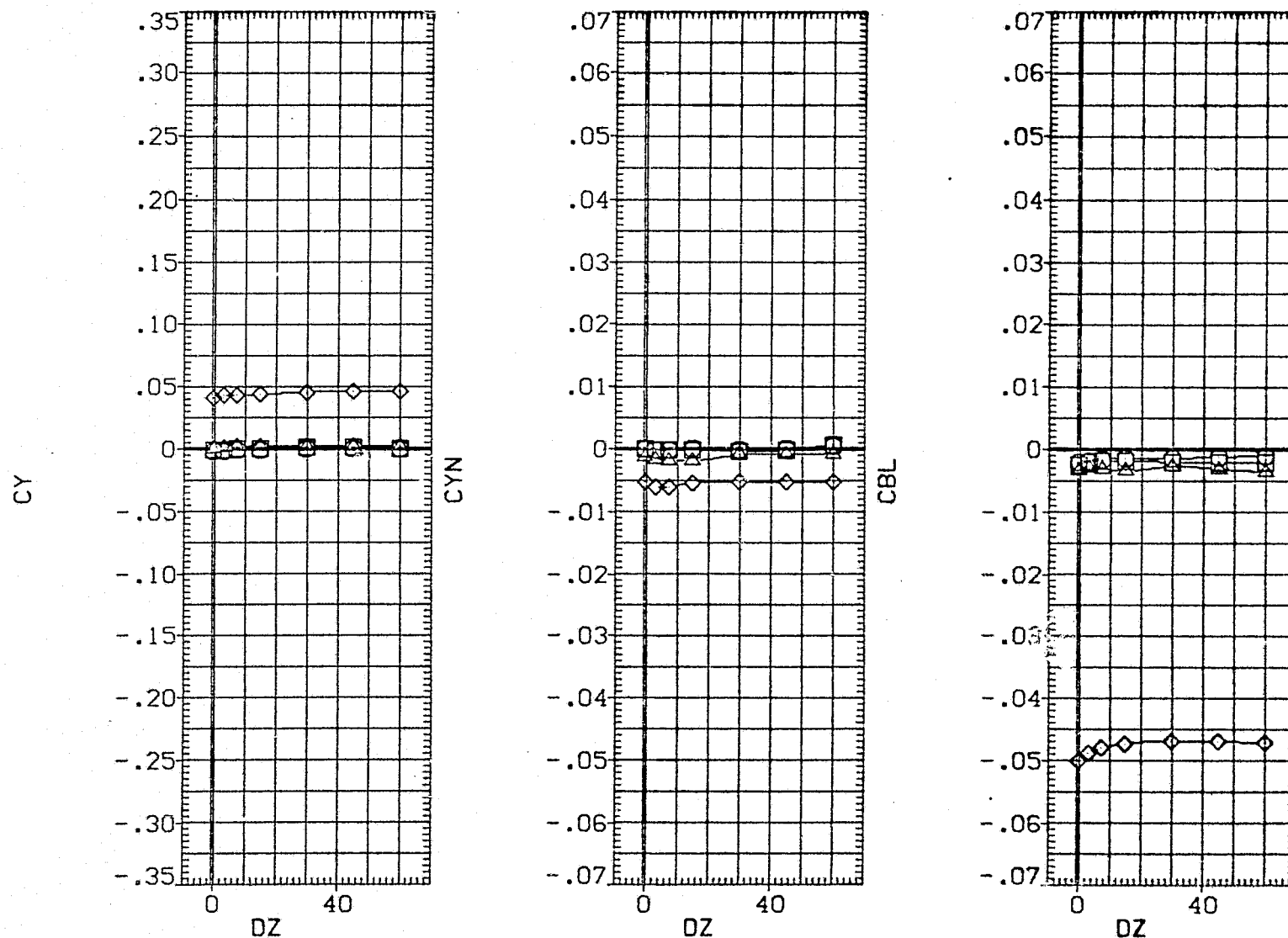


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)

(C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(LGN145)	DATA NOT AVAILABLE
(LGN052)	CA20 (747/1 01 S1) - (01 S1) D/S (052 - 010)
(LGN149)	DATA NOT AVAILABLE
(LGN146)	DATA NOT AVAILABLE

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	2690.0000	SQ.FT.
5.000	.000	4.000	.000	LREF	474.8100	IN.
5.000	-10.000	4.000	.000	BREF	936.6800	IN.
10.000	.000	4.000	.000	XMRP	109.0000	IN.X3
				YMRP	.0000	IN.Y3
				ZMRP	375.0000	IN.Z3
				SCALE	.0300	

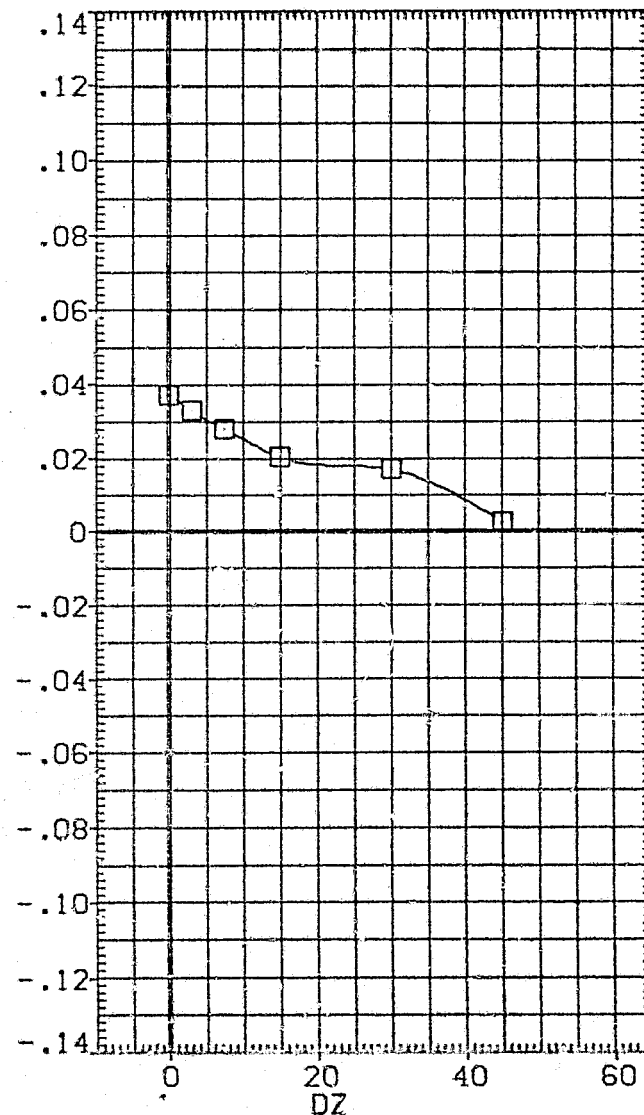
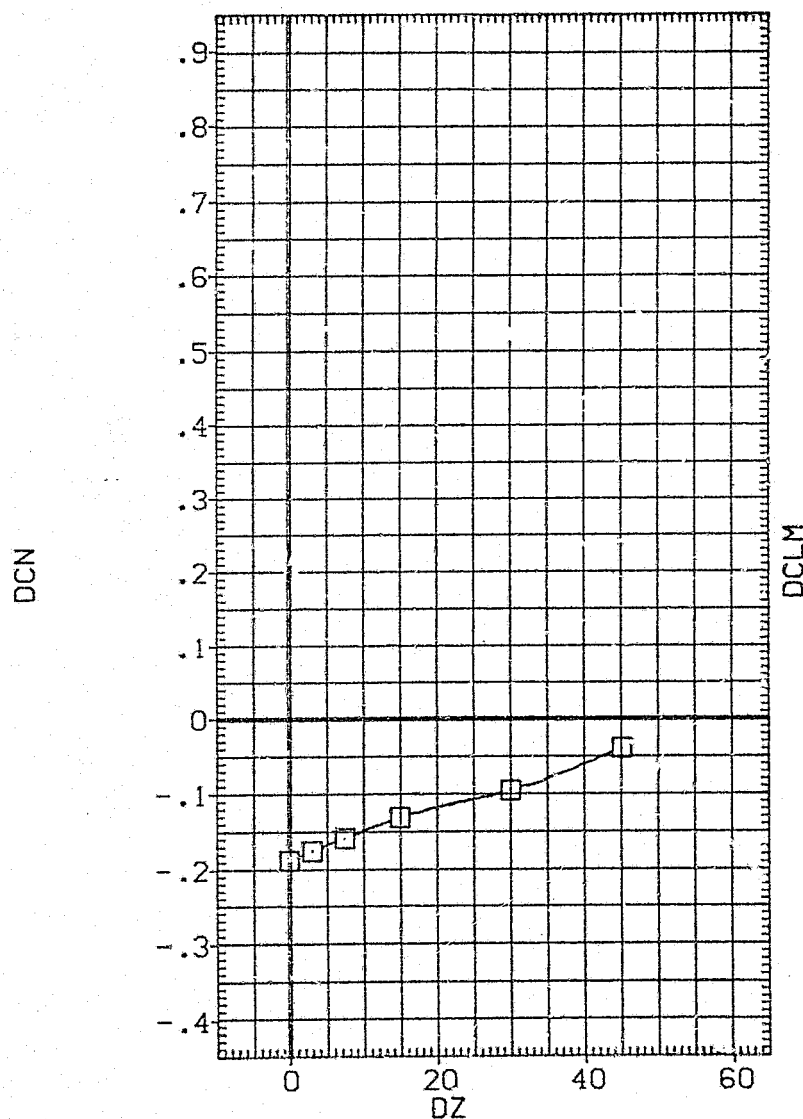


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0 = 6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	AILERON	ALPHAC	DX	REFERENCE INFORMATION		
(LGN145)	CA20 (747/1 01 S1) - (01 S1)	D/S (145 - 008)	.000	.000	4.000	.000	SREF	2690.0000 SQ.FT.
(LGN052)	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)	5.000	.000	4.000	.000	LREF	474.8100 IN.
(LGN149)	CA20 (747/1 01 S1) - (01 S1)	D/S (149 - 009)	5.000	-10.000	4.000	.000	DREF	936.6800 IN.
(LGN146)	CA20 (747/1 01 S1) - (01 S1)	D/S (146 - 011)	10.000	.000	4.000	.000	XMRP	1109.0000 IN.X0
							YMRP	.0000 IN.Y0
							ZMRP	375.0000 IN.Z0
							SCALE	.0300

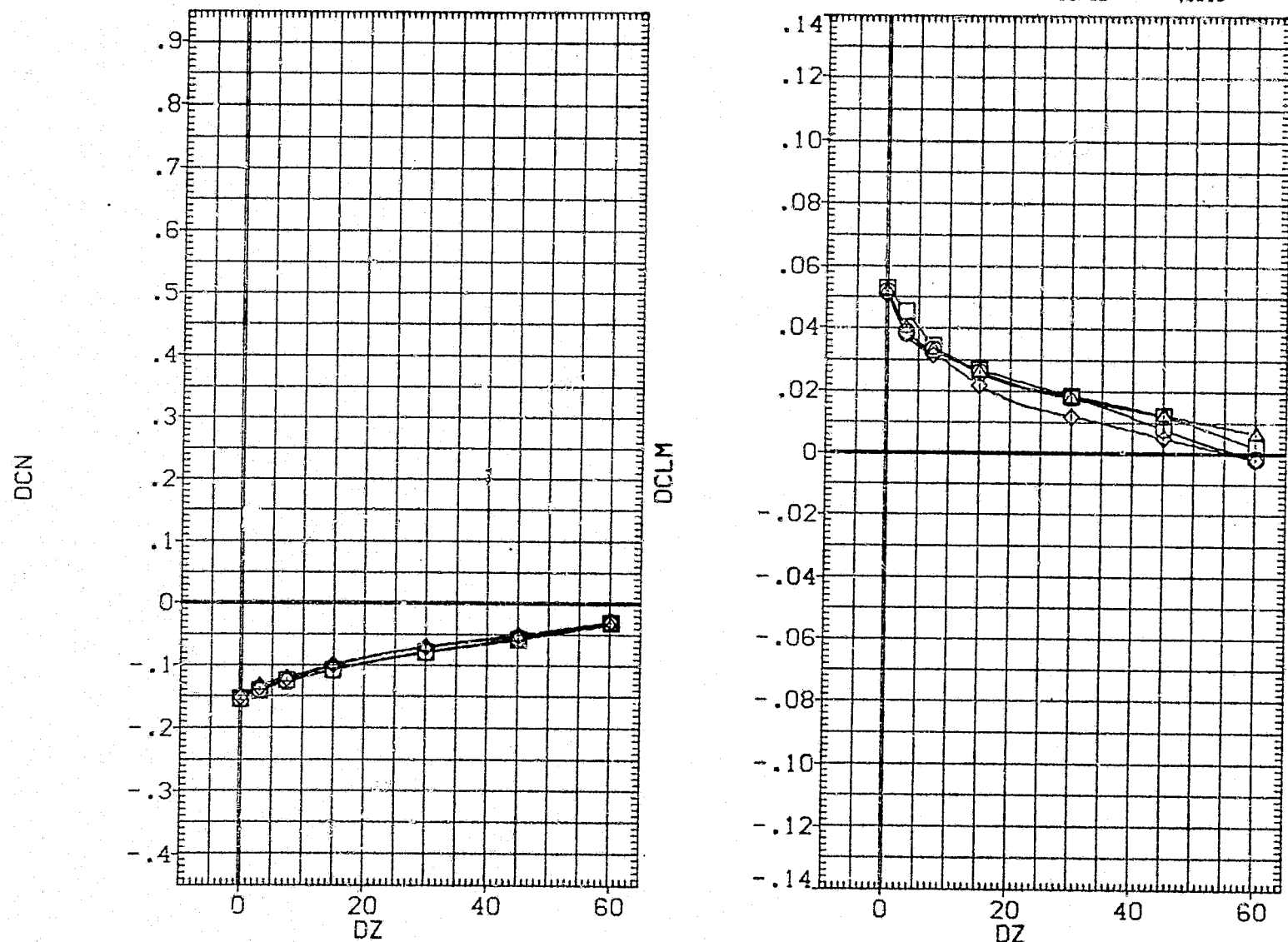


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0= 10.00

0.11

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION
(LGN145)	CA20 (747/1 01 S1) - (01 S1)	D/S (145 - 008)	.000	.000	4.000	.000 SREF 2690.0000 SQ.FT.
(LGN052)	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)	5.000	.000	4.000	.000 LREF 474.8100 IN.
(LGN149)	CA20 (747/1 01 S1) - (01 S1)	D/S (149 - 009)	5.000	-10.000	4.000	.000 BREF 936.6800 IN.
(LGN146)	CA20 (747/1 01 S1) - (01 S1)	D/S (146 - 011)	10.000	.000	4.000	.000 XMRP 1109.0000 IN.X0
						.000 YMRP .0000 IN.Y0
						SCALE 375.0000 IN.Z0
						.0300

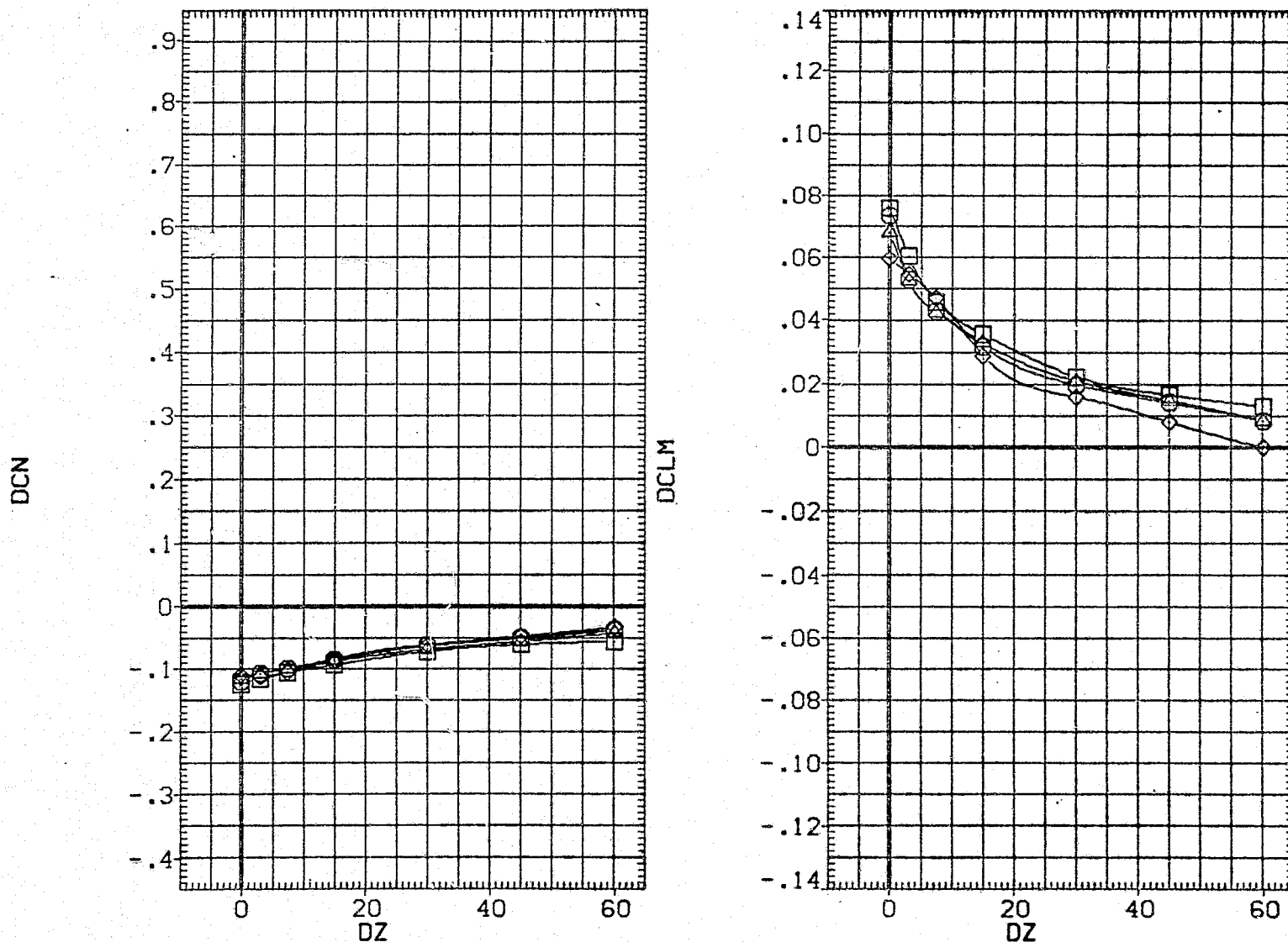


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(LGN145)	DATA NOT AVAILABLE
(LGN052)	CA20 (747/1 01 S1) - (01 S1)
(LGN149)	DATA NOT AVAILABLE
(LGN146)	DATA NOT AVAILABLE

D/S (052 - 010)

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	2690.0000	SQ.FT.
5.000	.000	4.000	.000	LREF	474.8100	IN.
5.000	-10.000	4.000	.000	BREF	936.6800	IN.
10.000	.000	4.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

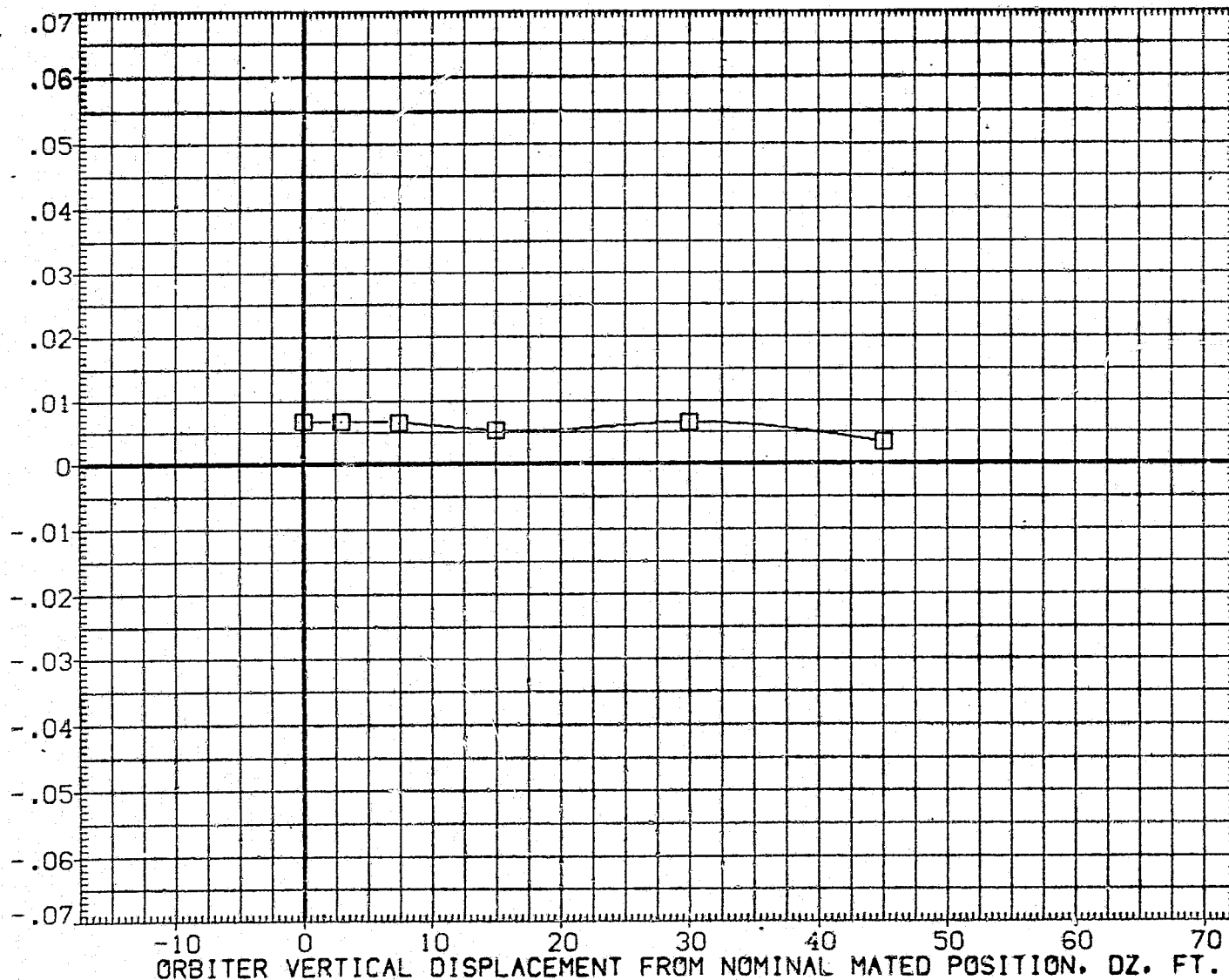


FIG 37

(A)ALPHA0=

ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)

6.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	AILERON	ALPHAC	DX	REFERENCE INFORMATION		
(LGN145)	CA20 (747/1 01 S1) - (01 S1)	D/S (145 - 008)	.000	.000	4.000	SREF	2690.0000	50.FT.
(LGN052)	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)	5.000	.000	4.000	LREF	474.8100	IN.
(LGN149)	CA20 (747/1 01 S1) - (01 S1)	D/S (149 - 009)	5.000	-10.000	4.000	BREF	936.6800	IN.
(LGN146)	CA20 (747/1 01 S1) - (01 S1)	D/S (146 - 011)	10.000	.000	4.000	XMRP	1109.0000	IN.X0
						YMRP	.0000	IN.Y0
						ZMRP	375.0000	IN.Z0
						SCALE	.0300	

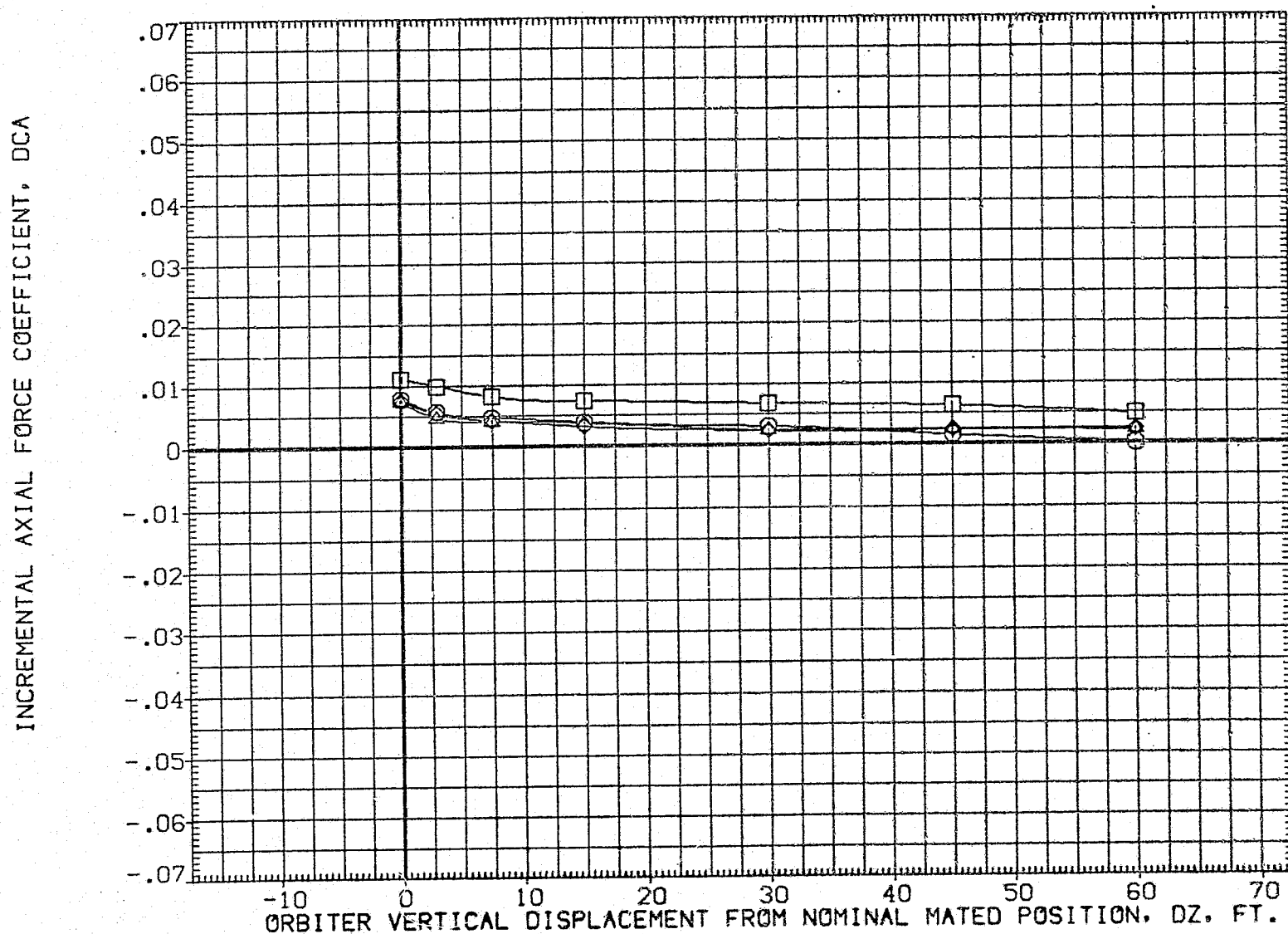


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B)ALPHA0= 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
(LGN145)	CA20 (747/1 01 S1) - (01 S1)	D/S (145 - 008)	.000	.000	4.000	.000	SREF	2690.0000 SQ.FT.
(LGN052)	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)	5.000	.000	4.000	.000	LREF	474.8100 IN.
(LGN149)	CA20 (747/1 01 S1) - (01 S1)	D/S (149 - 009)	5.000	-10.000	4.000	.000	BREF	936.6800 IN.
(LGN146)	CA20 (747/1 01 S1) - (01 S1)	D/S (146 - 011)	10.000	.000	4.000	.000	XMRP	1109.0000 IN.X0
							YMRP	.0000 IN.Y0
							ZMRP	375.0000 IN.Z0
							SCALE	.0300

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

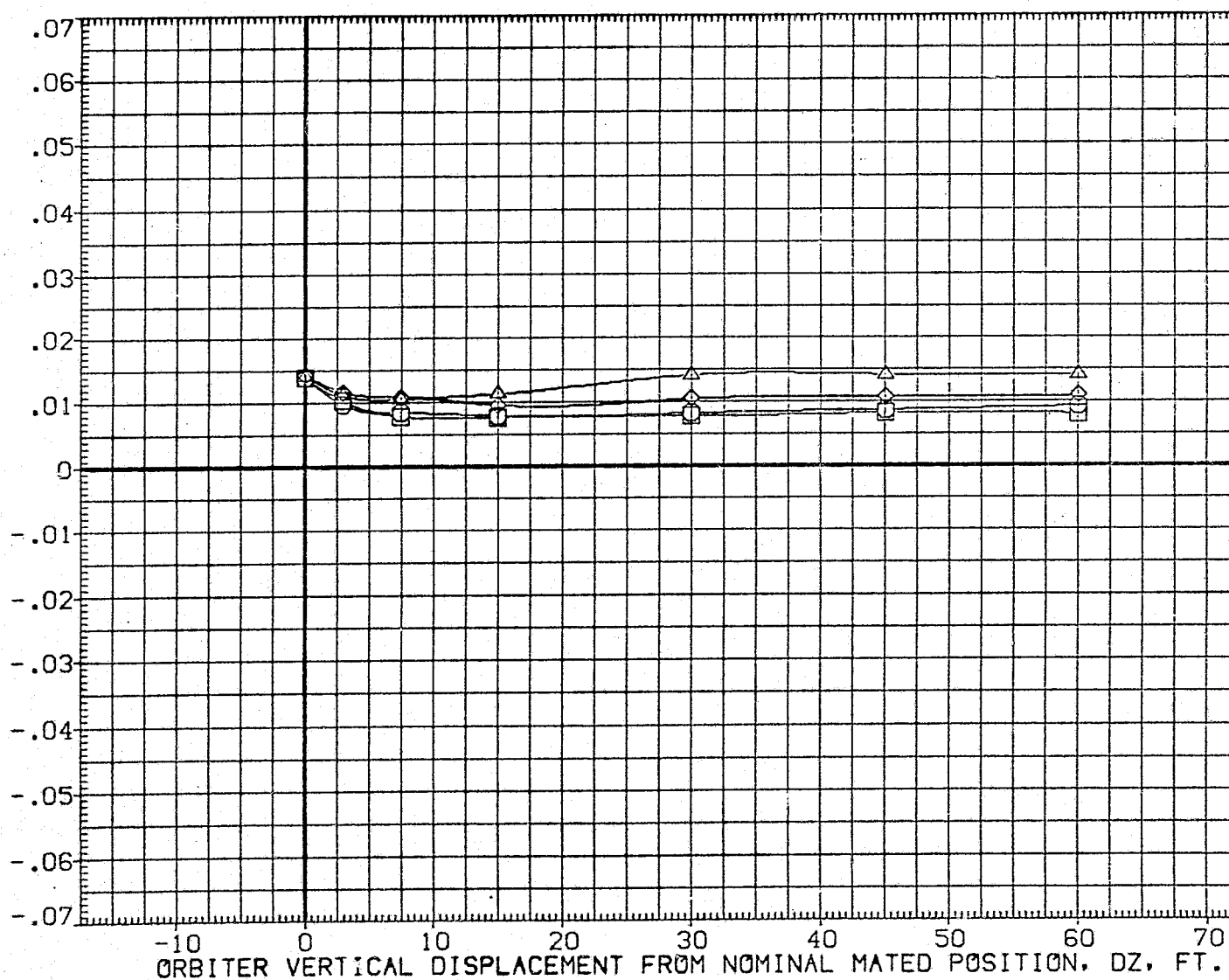


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(LGN145)	DATA NOT AVAILABLE
(LGN052)	CA20 (747/1 01 S1) - (01 S1) D/S (052 - 010)
(LGN149)	DATA NOT AVAILABLE
(LGN146)	DATA NOT AVAILABLE

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	2690.0000	SG.FT.
5.000	.000	4.000	.000	LREF	474.8100	IN.
5.000	-10.000	4.000	.000	BREF	936.6800	IN.
10.000	.000	4.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

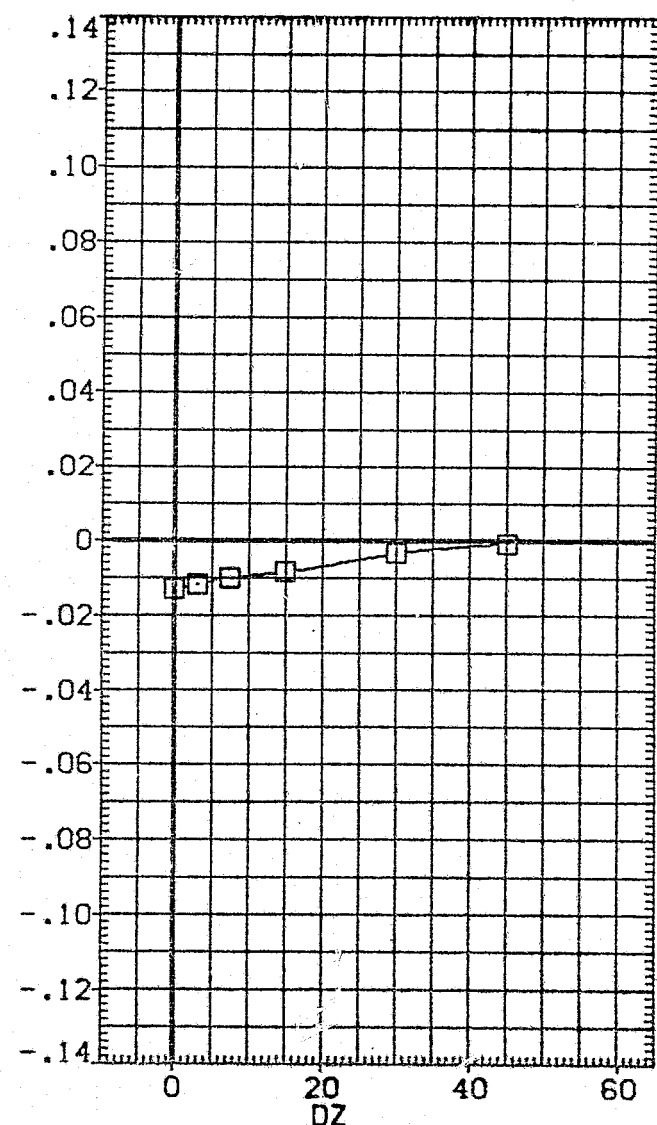
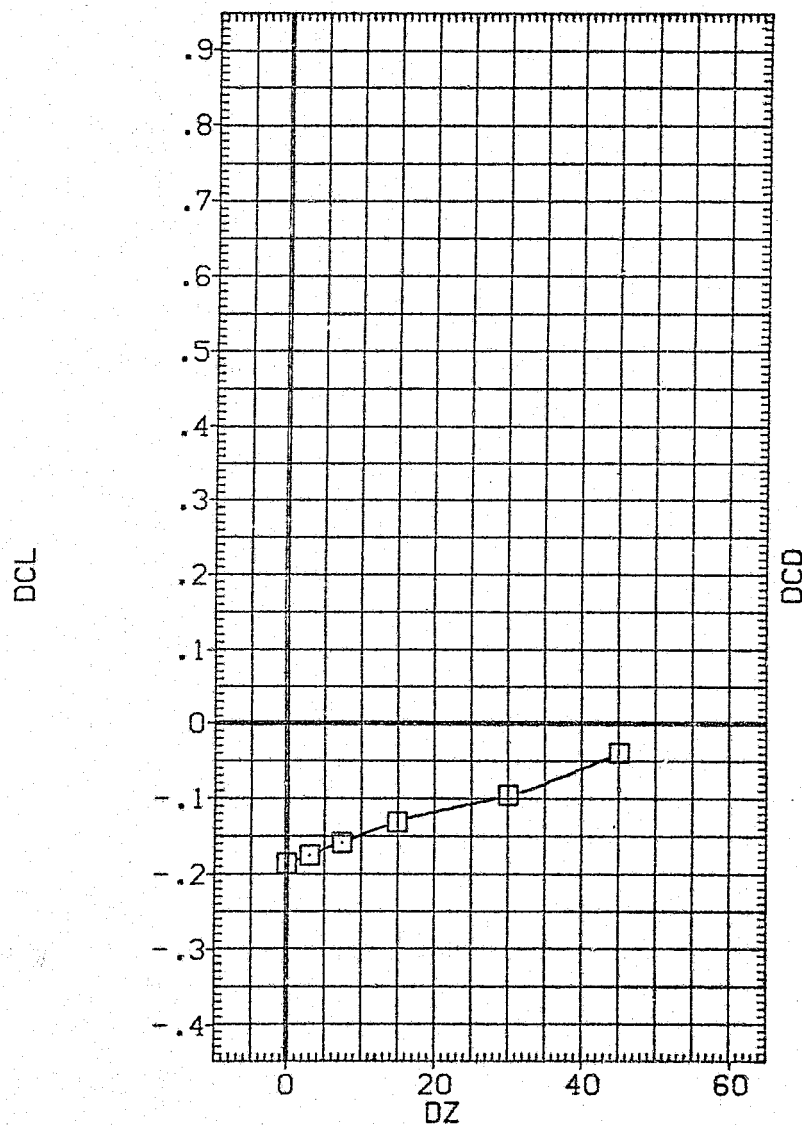


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (A) ALPHA0 = 6.00

DATA SET SYMBOL CONFIGURATION DESCRIPTION

(LGN145)	□	CA20 (747/1 01 S1) - (01 S1)	D/S (145 - 008)
(LGN052)	○	CA20 (747/1 01 S1) - (01 S1)	D/S (052 - 010)
(LGN149)	×	CA20 (747/1 01 S1) - (01 S1)	D/S (149 - 009)
(LGN146)	△	CA20 (747/1 01 S1) - (01 S1)	D/S (146 - 011)

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	2690.0000	50.FT.
3.000	.000	4.000	.000	LREF	474.8100	IN.
5.000	-10.000	4.000	.000	BREF	936.6800	IN.
10.000	.000	4.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

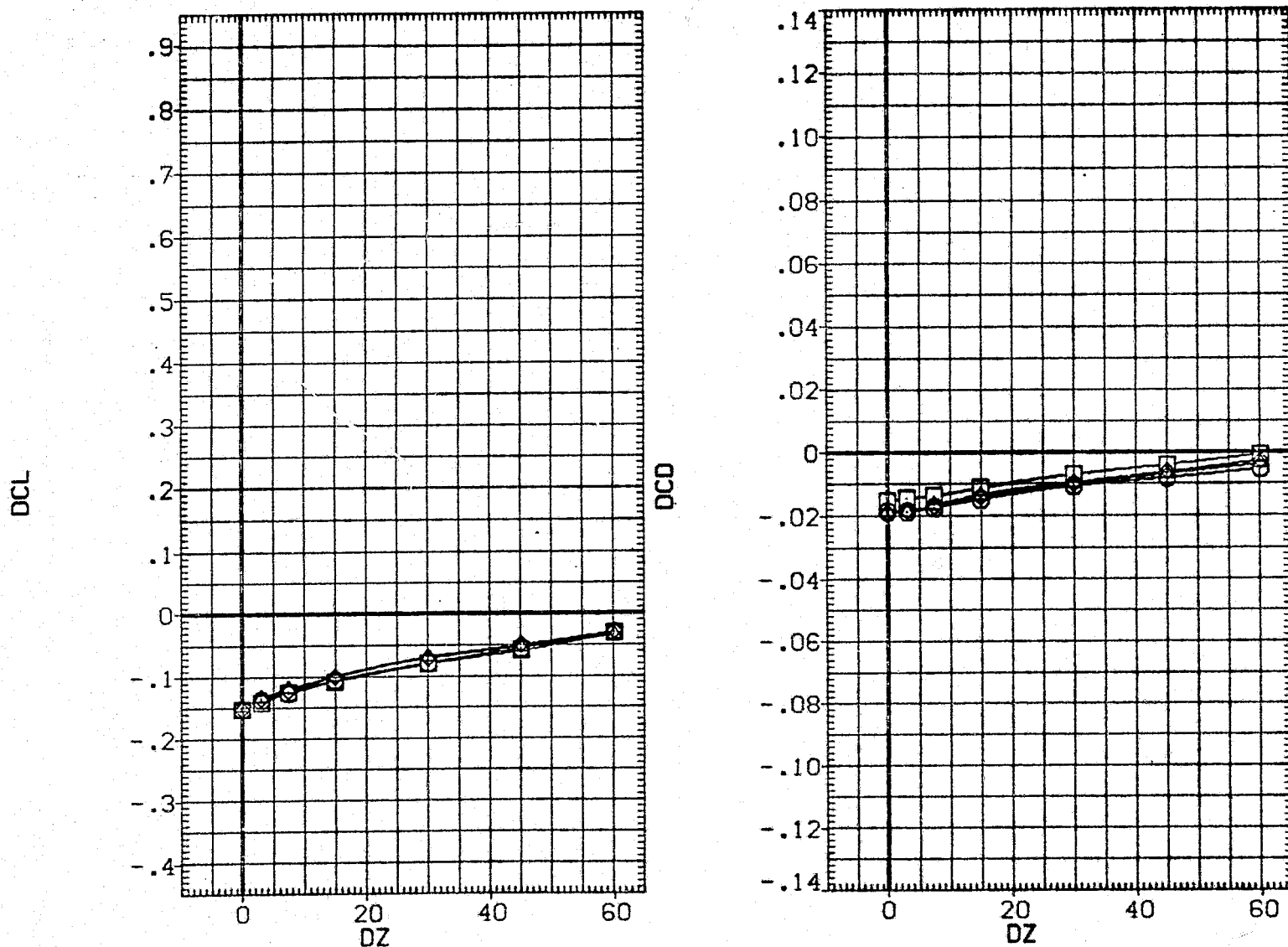


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (B) ALPHA0 = 10.00

DATA SET SYMBOL	CONFIGURATION DESCRIPTION
(LGN145) □	CA20 (747/1 01 S1) - (01 S1) D/S (145 - 008)
(LGN052) □	CA20 (747/1 01 S1) - (01 S1) D/S (052 - 010)
(LGN149) ◇	CA20 (747/1 01 S1) - (01 S1) D/S (149 - 009)
(LGN146) △	CA20 (747/1 01 S1) - (01 S1) D/S (146 - 011)

ELEVON	AILRON	ALPHAC	DX	REFERENCE INFORMATION		
.000	.000	4.000	.000	SREF	2690.0000	SQ.FT.
5.000	.000	4.000	.000	LREF	474.8100	IN.
5.000	-10.000	4.000	.000	BREF	936.6800	IN.
10.000	.000	4.000	.000	XMRP	1109.0000	IN.X0
				YMRP	.0000	IN.Y0
				ZMRP	375.0000	IN.Z0
				SCALE	.0300	

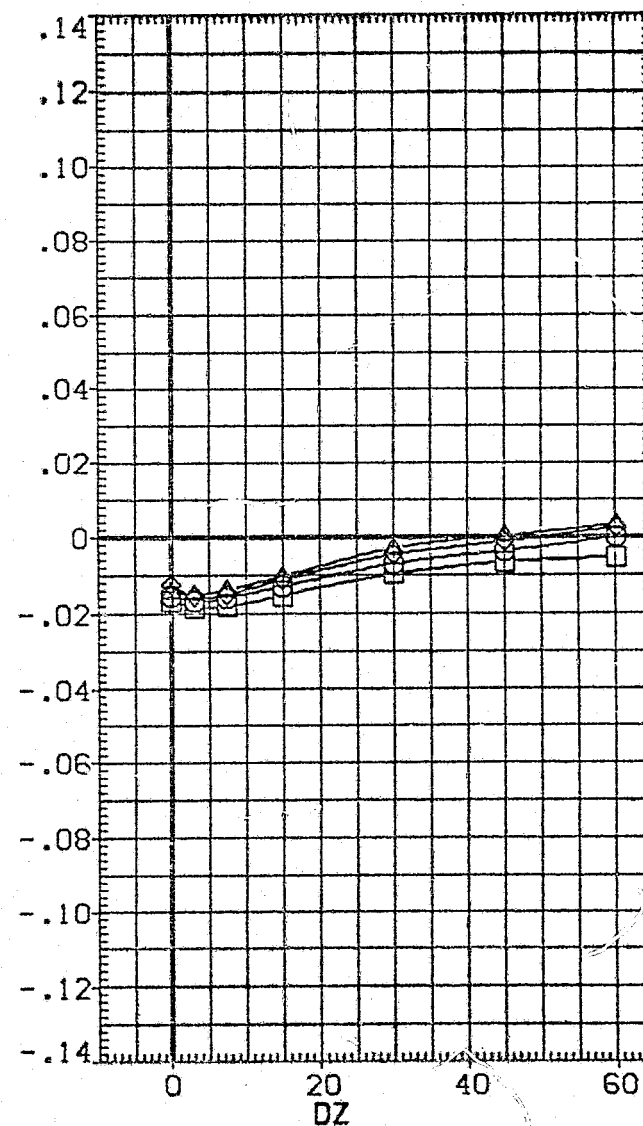
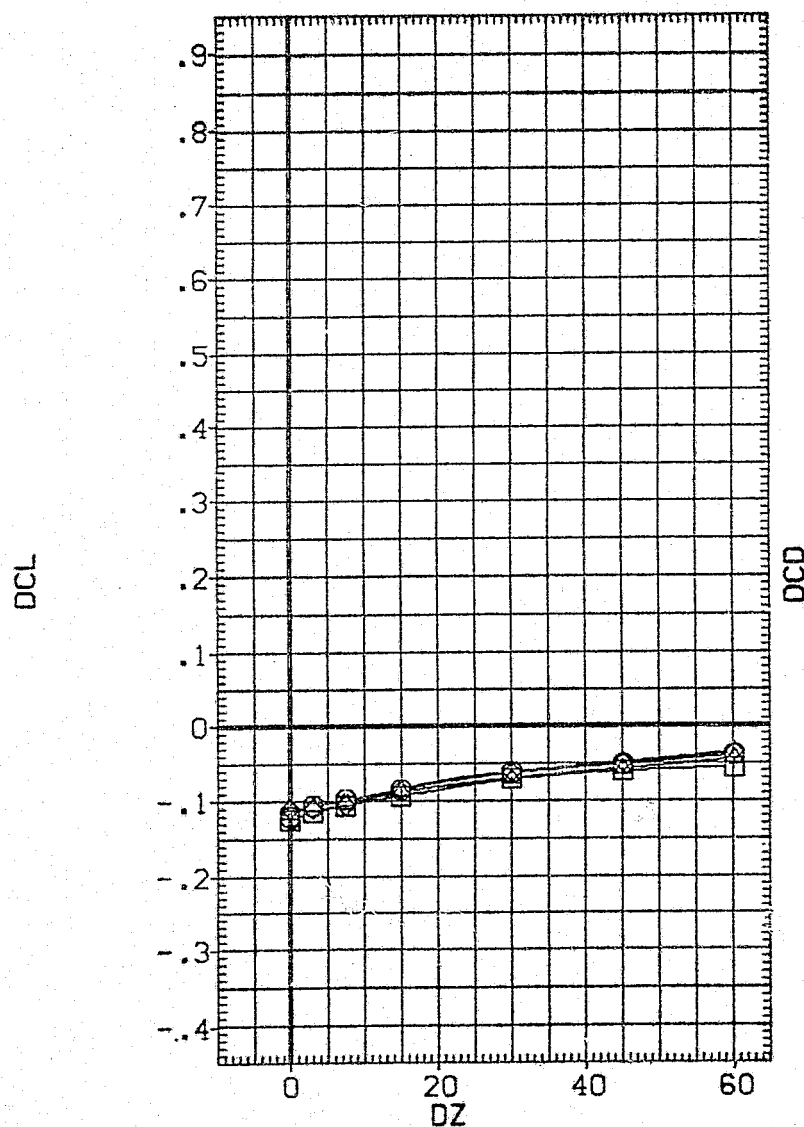


FIG 37 ELEVON EFFECTS ON ORBITER SEPARATION CHARACTERISTICS (DELTA Y = 0)
 (C)ALPHA0= 14.00

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

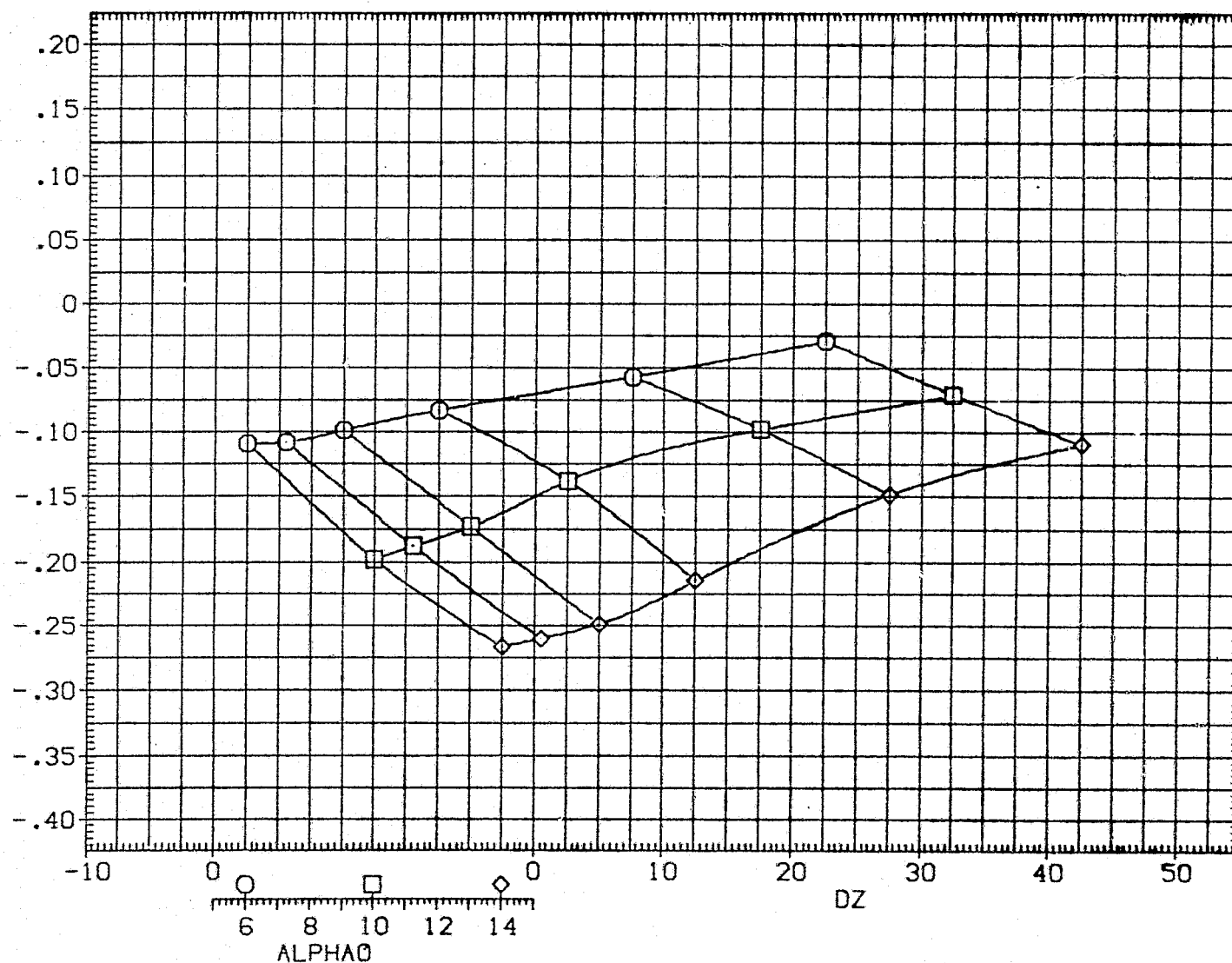


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (049 - 035) (6GN049)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

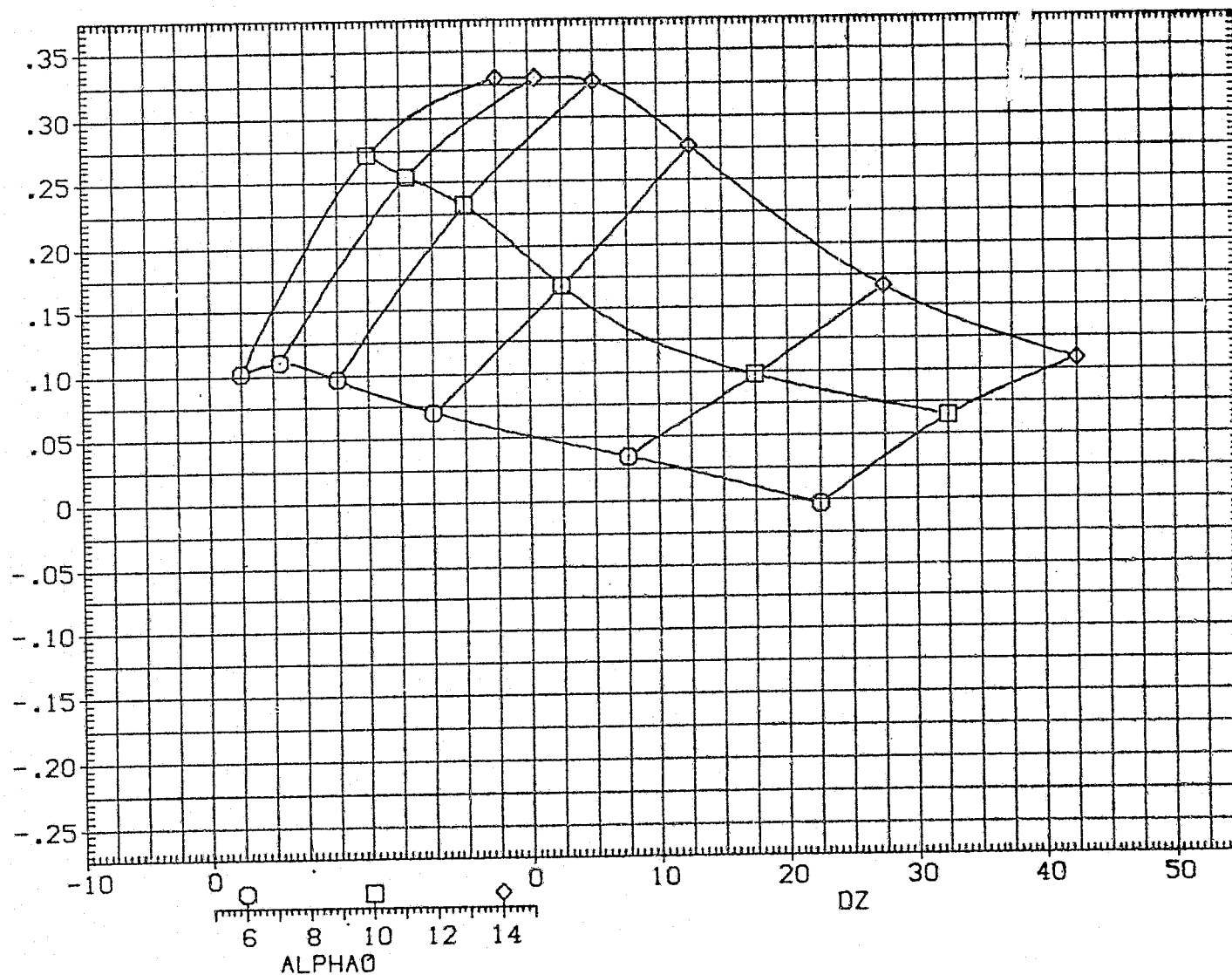


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

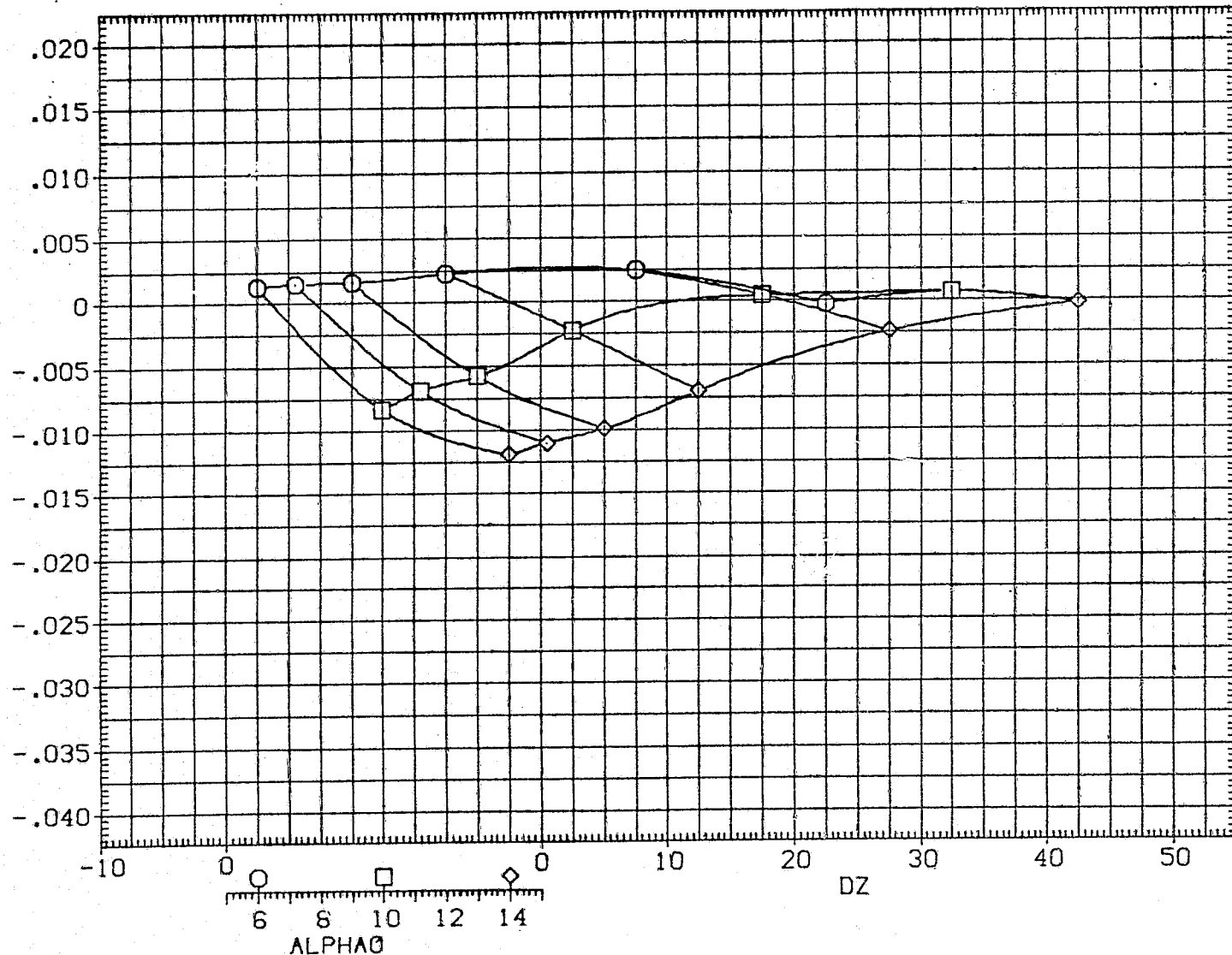


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (049 - 035) (6GN049)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

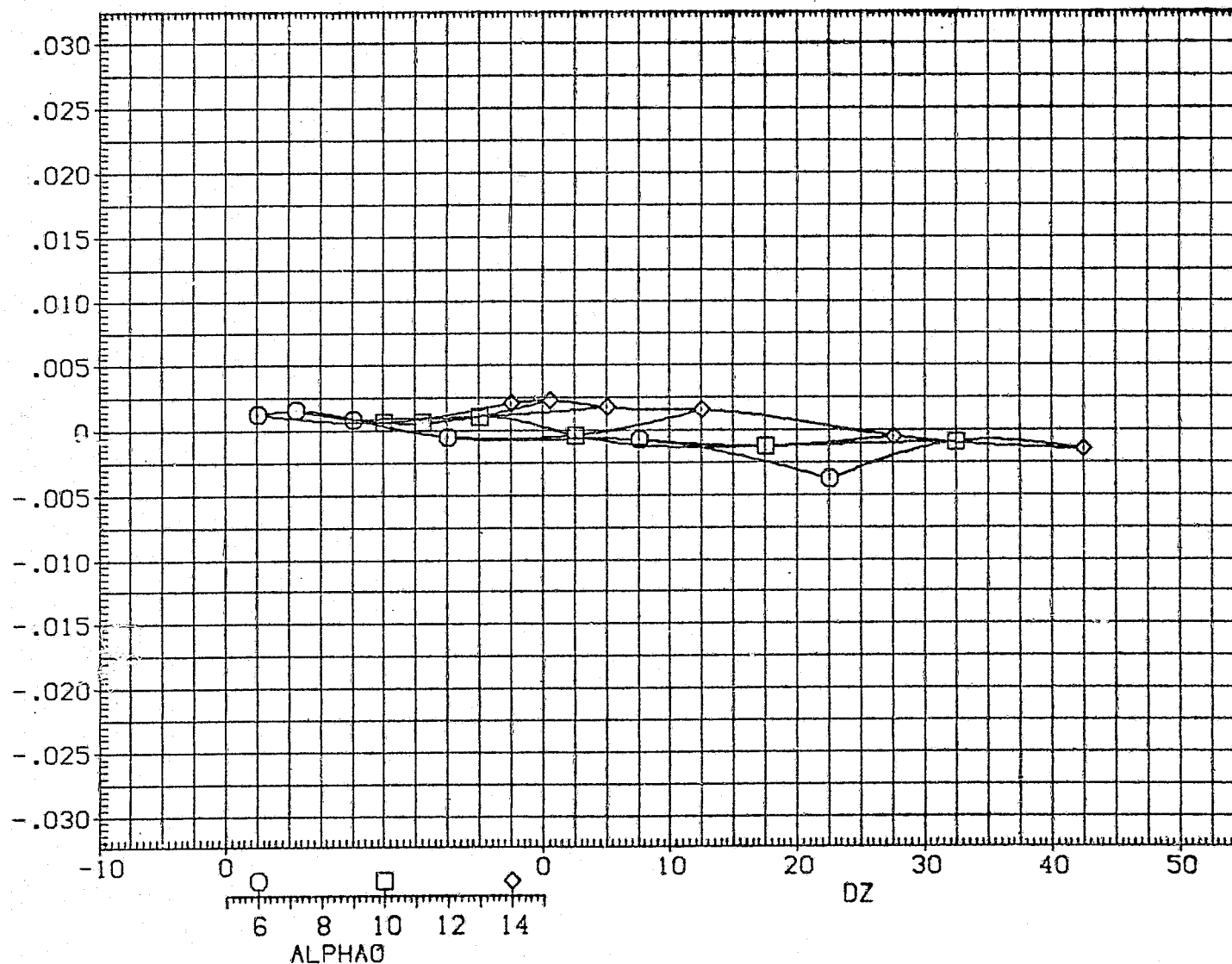


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN, (STABILITY AXIS)

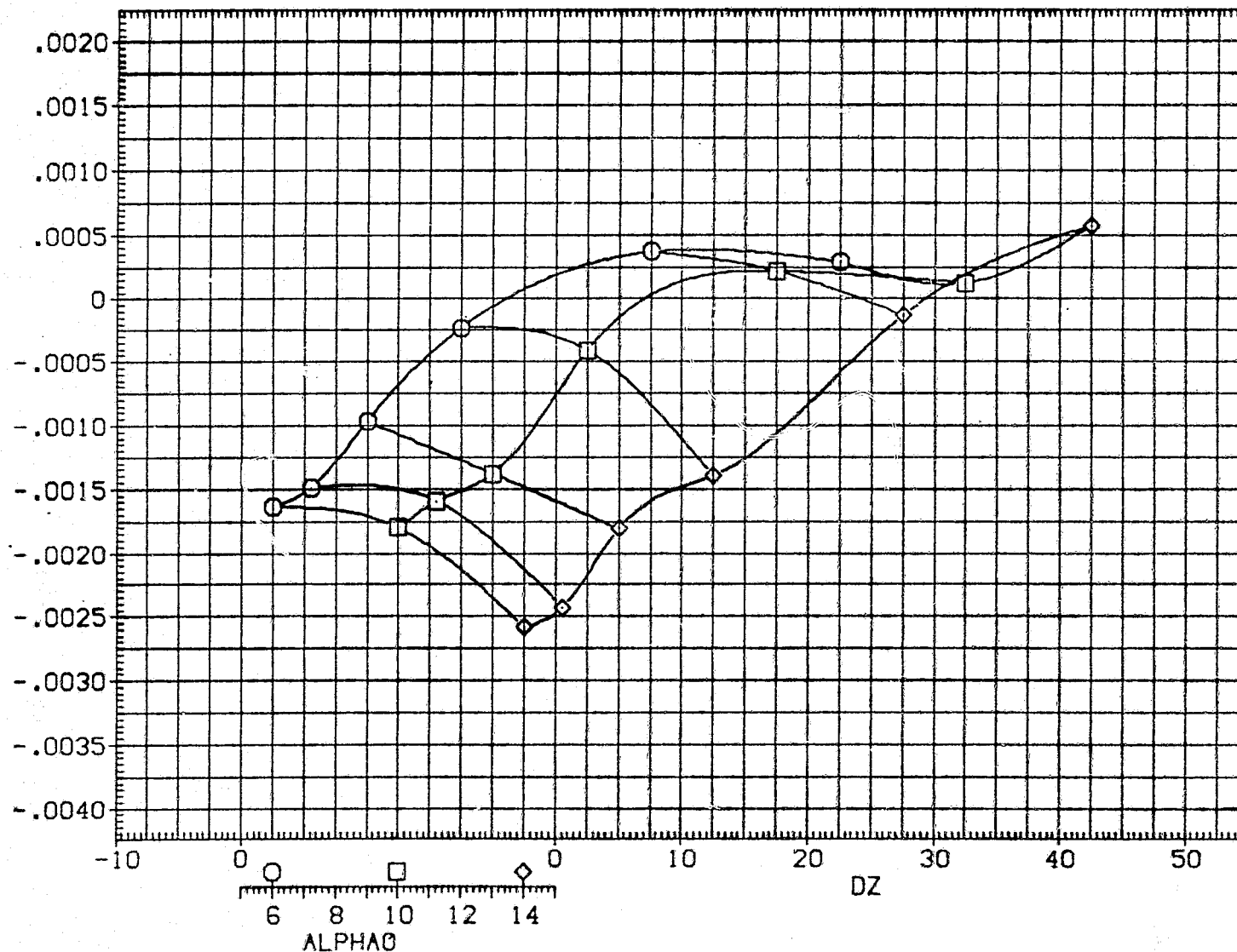


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (049 - 035) (6GN049)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SD.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

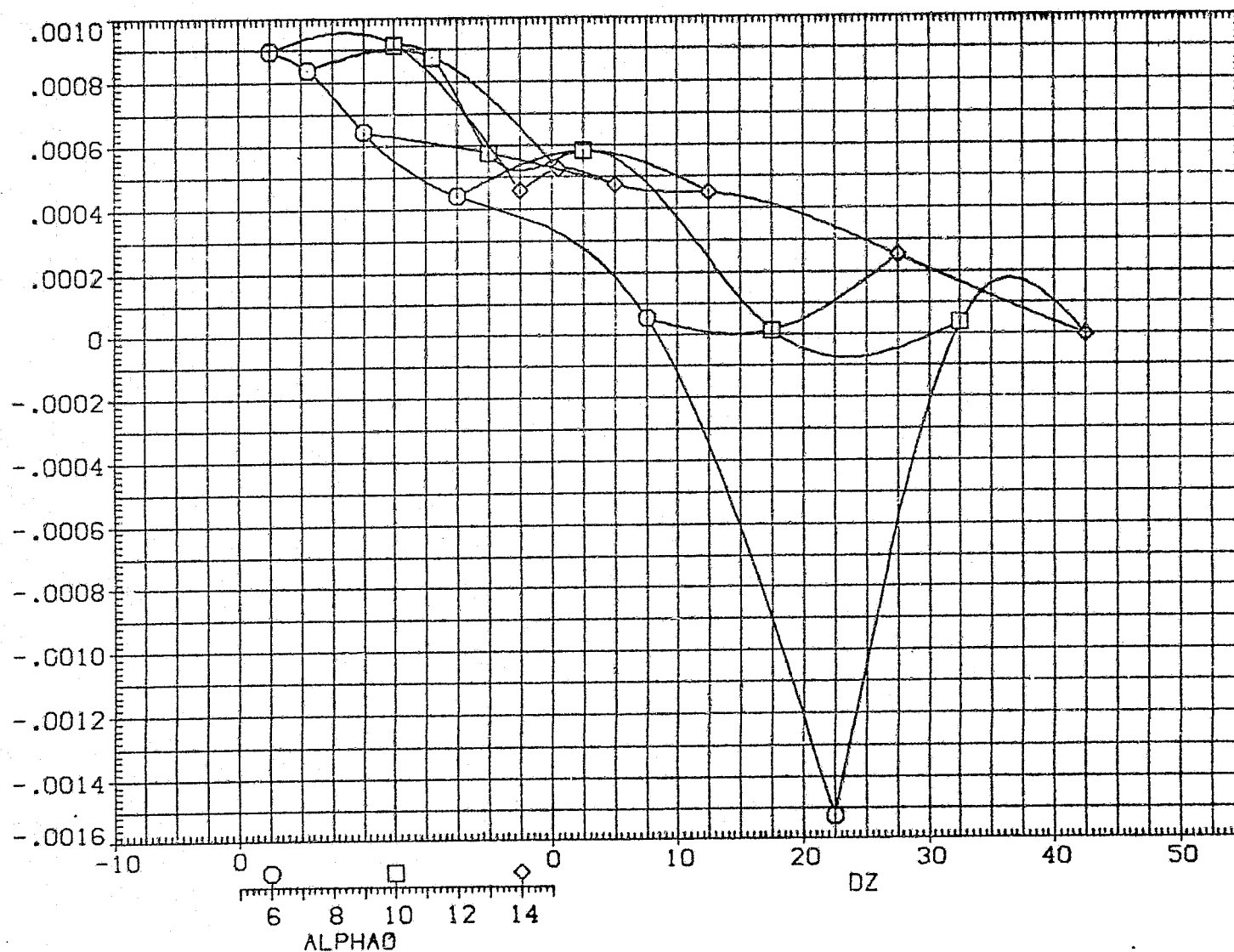


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

V/S (049 - 035) (6GN049)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

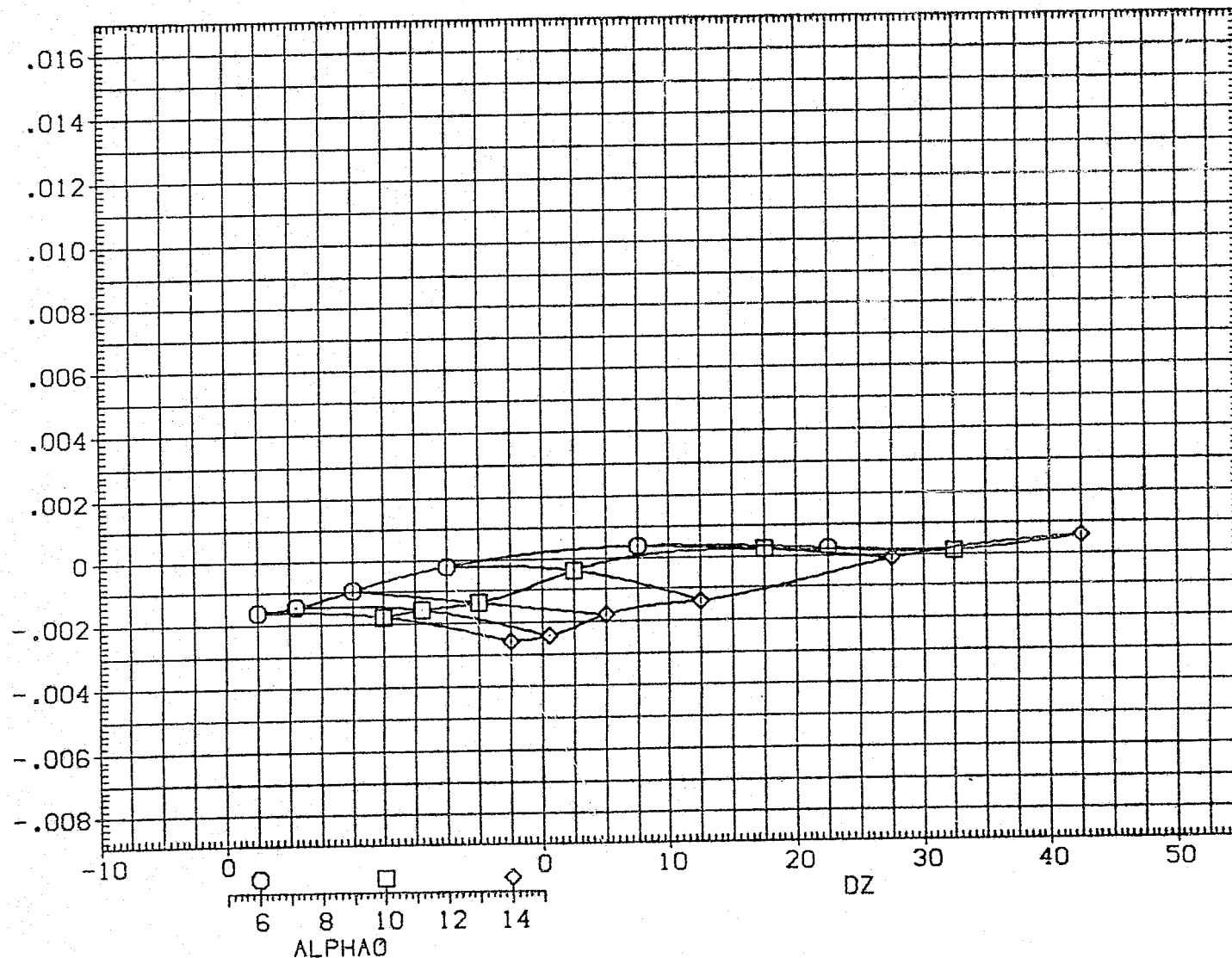


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (049 - 035) (66N049)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

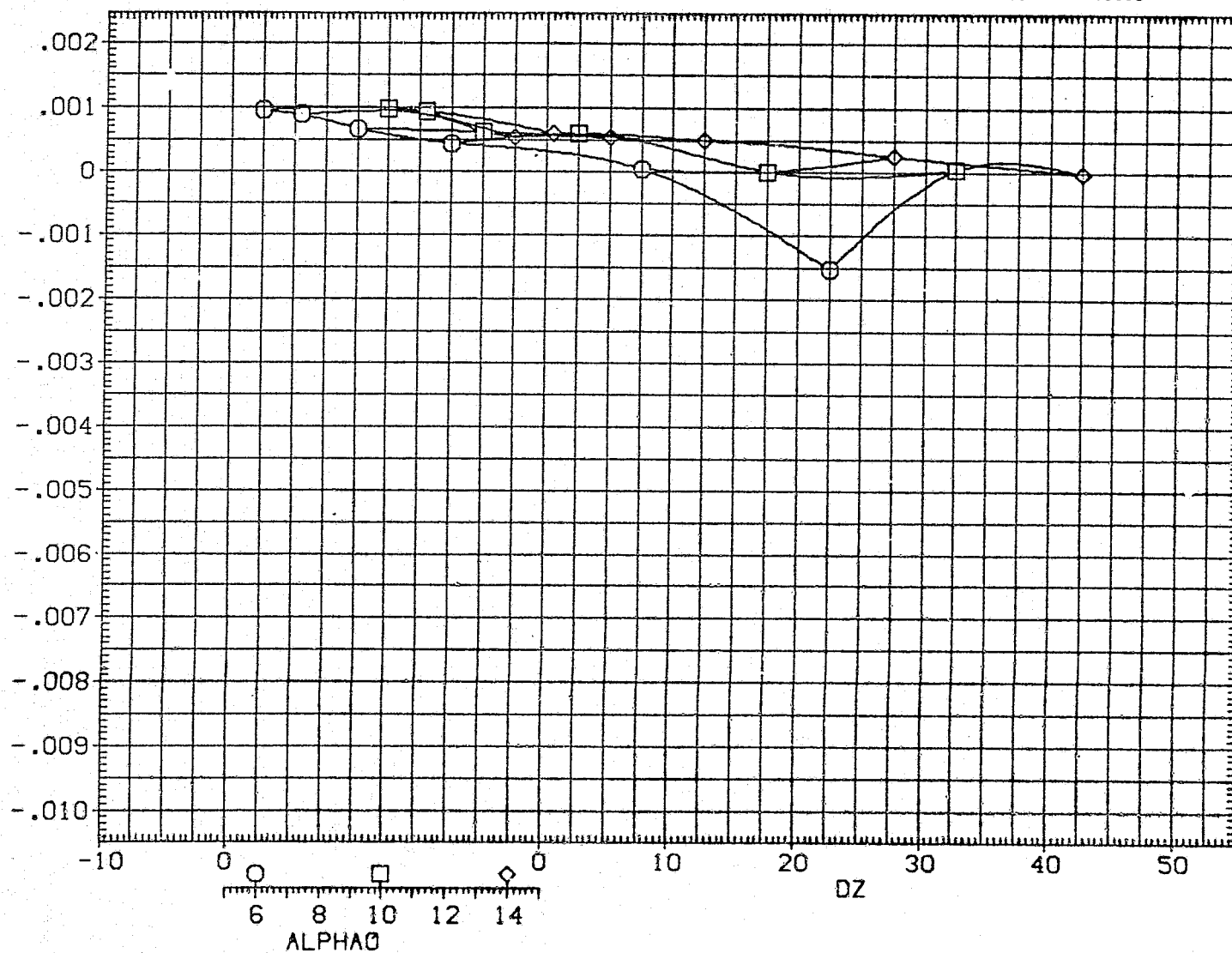


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

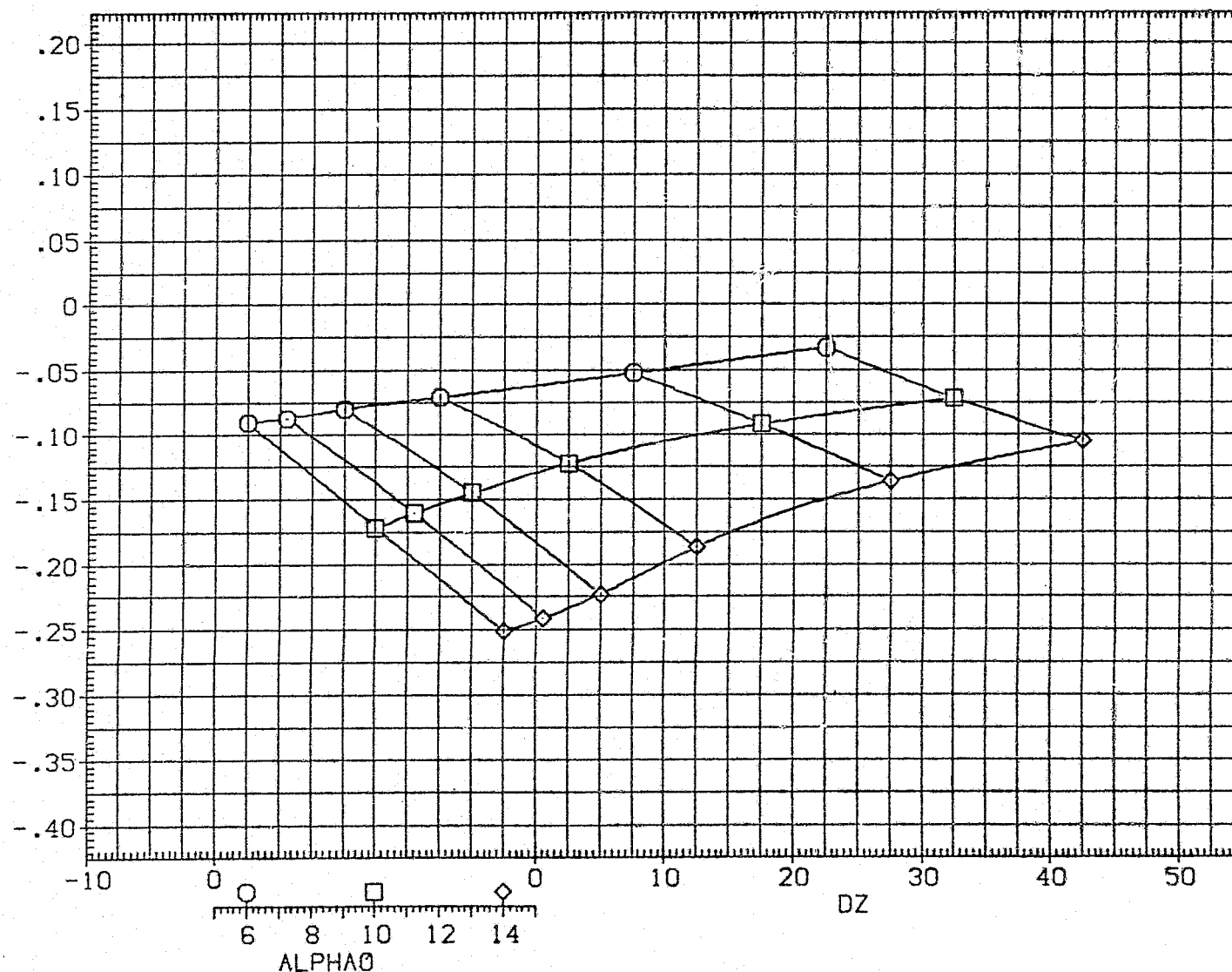


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (052 - 035) (6GN052)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

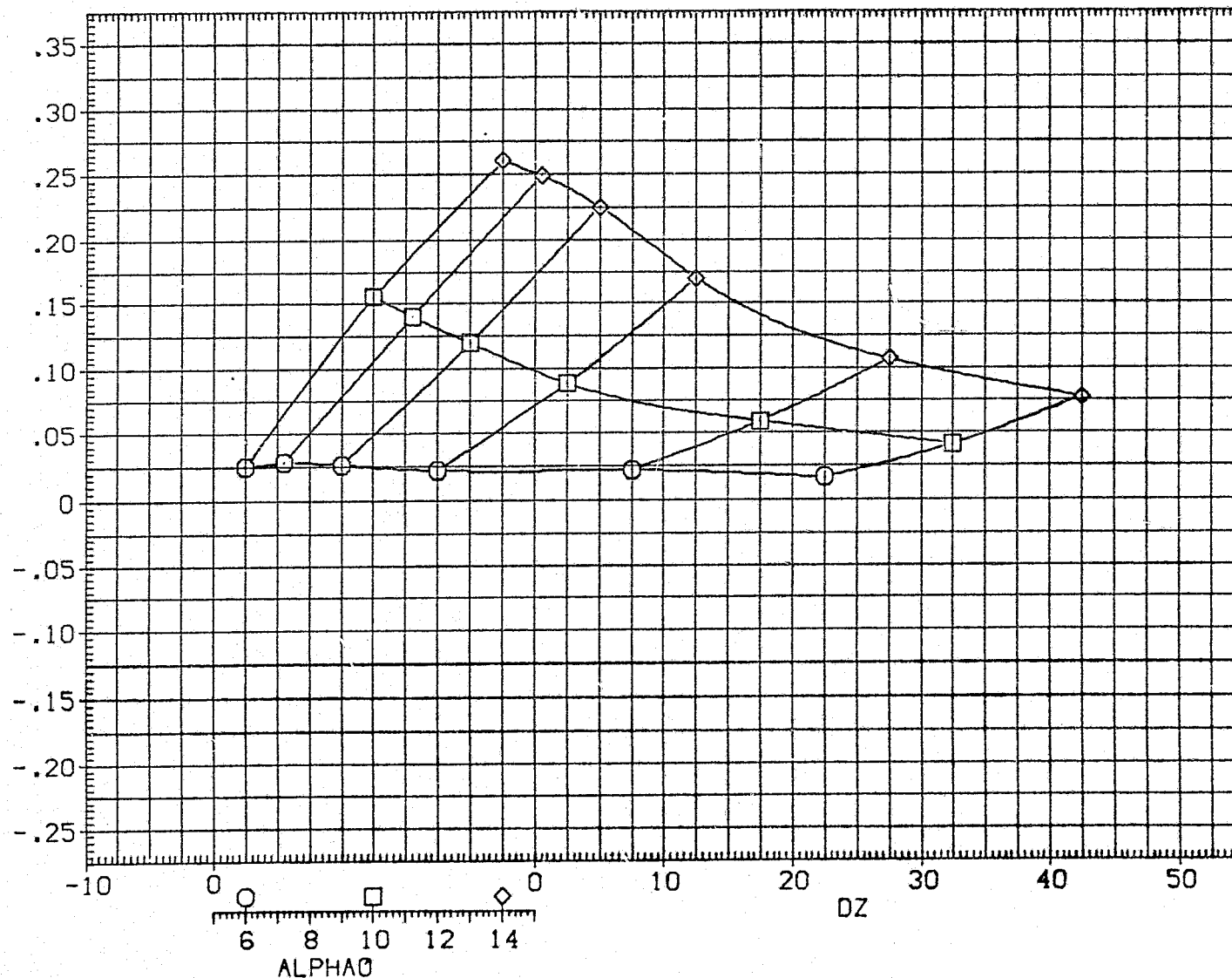


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

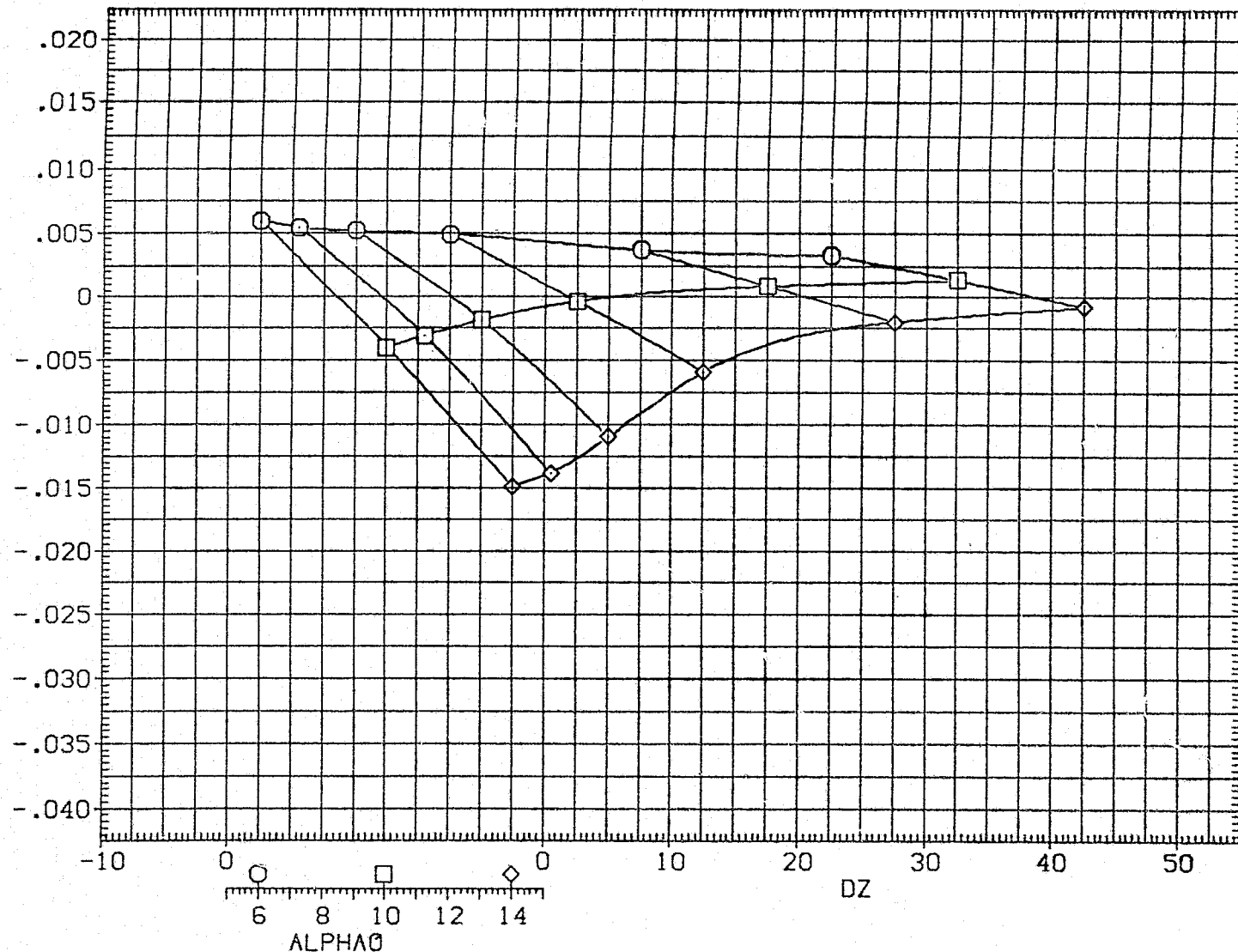


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (052 - 035) (6GN052)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

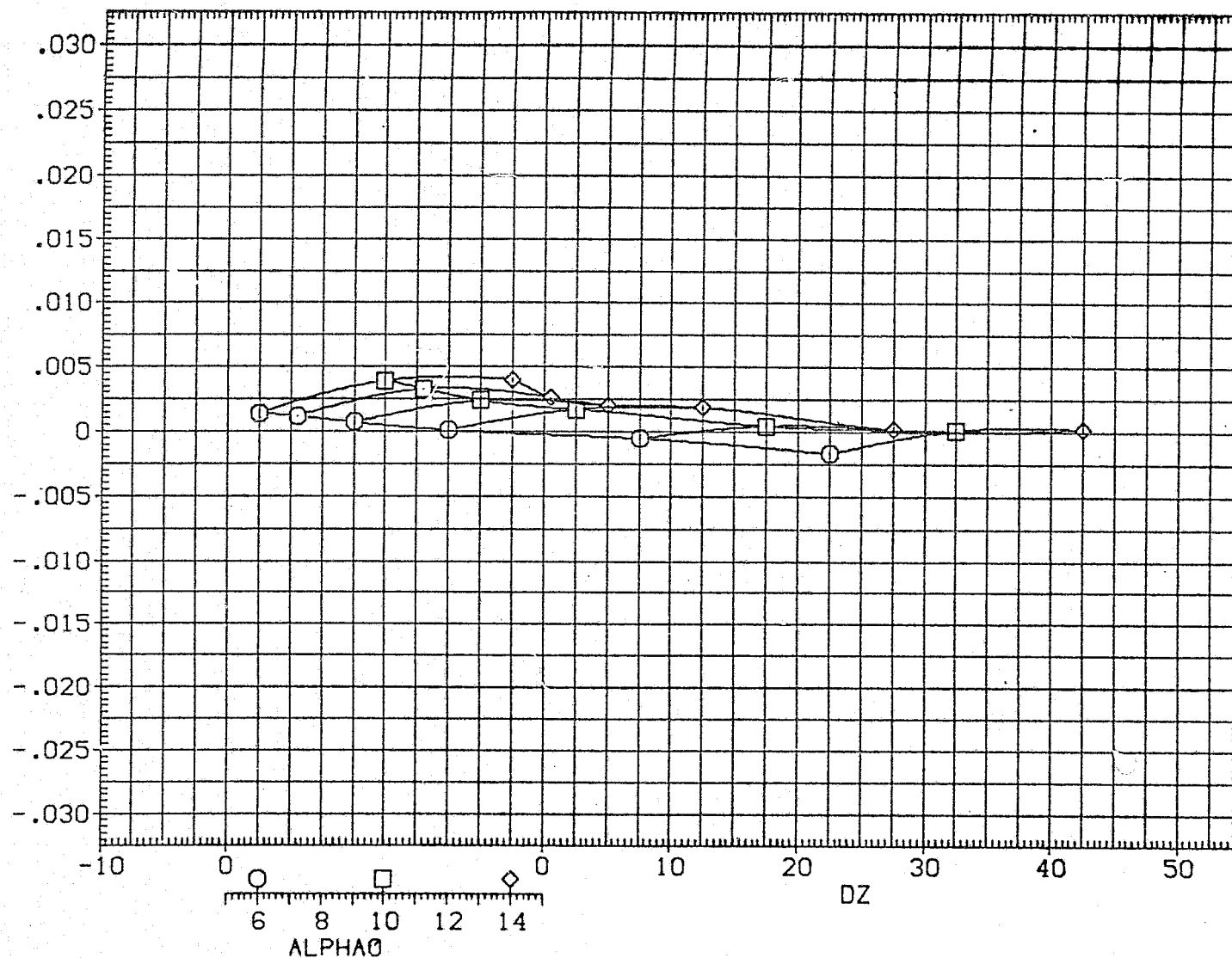


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.9000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN. (STABILITY AXIS)

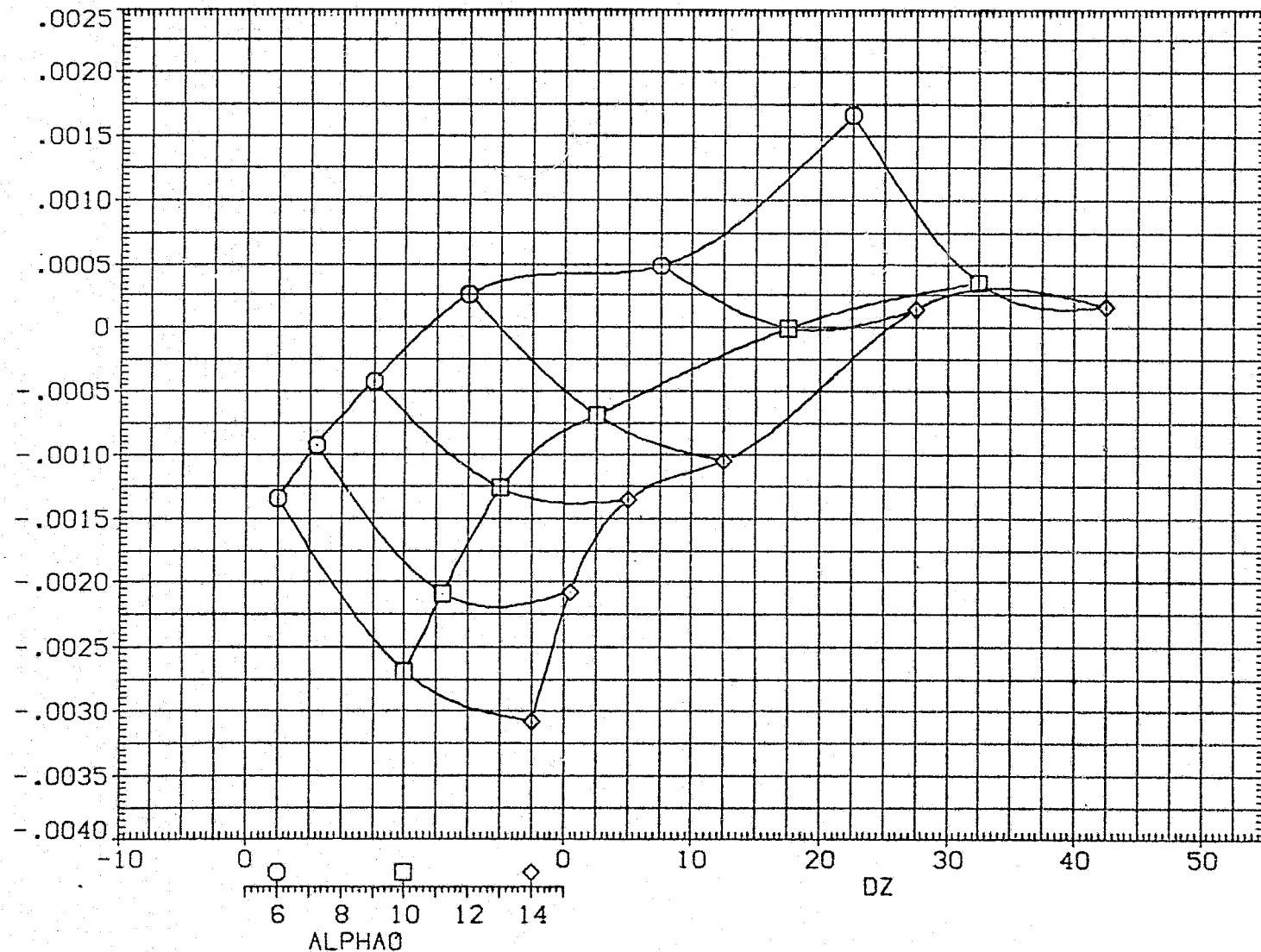


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (052 - 035) (60N052)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

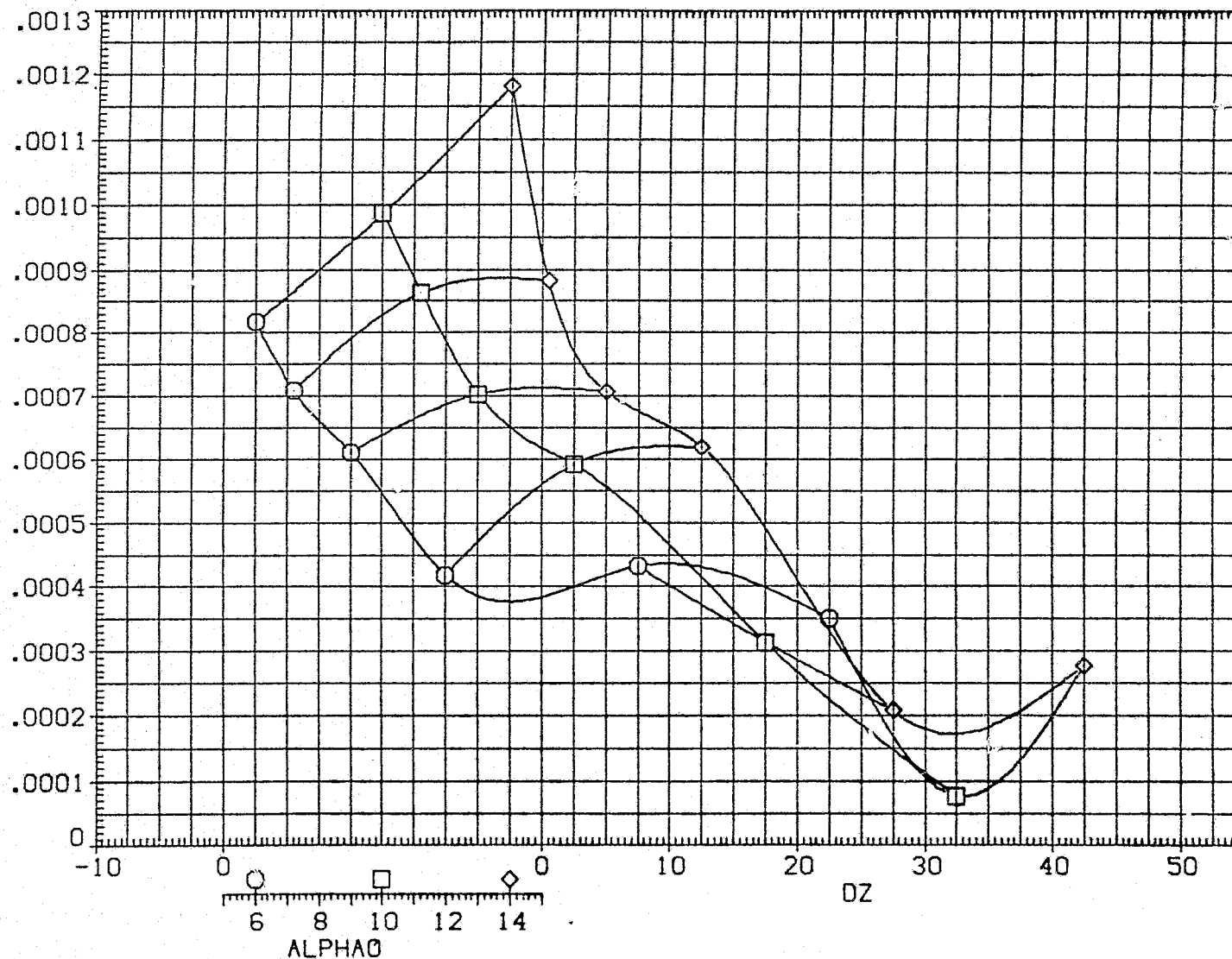


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN. (BODY AXIS)

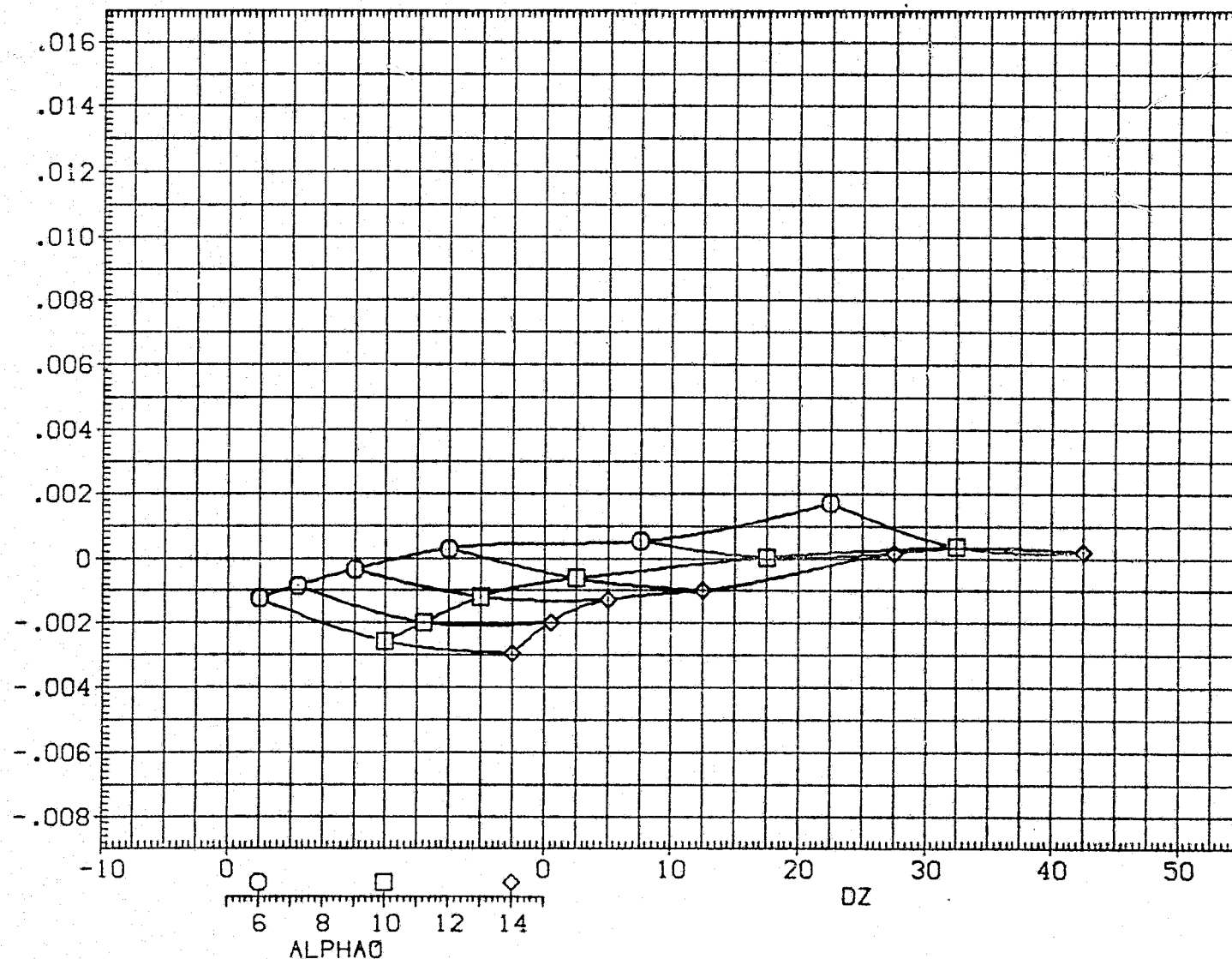


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (052 - 035)(6GN052)

PARAMETRIC VALUES			
ALPHA0	4.000	BETAC	.000
ELV-IB	.000	ELV-DB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

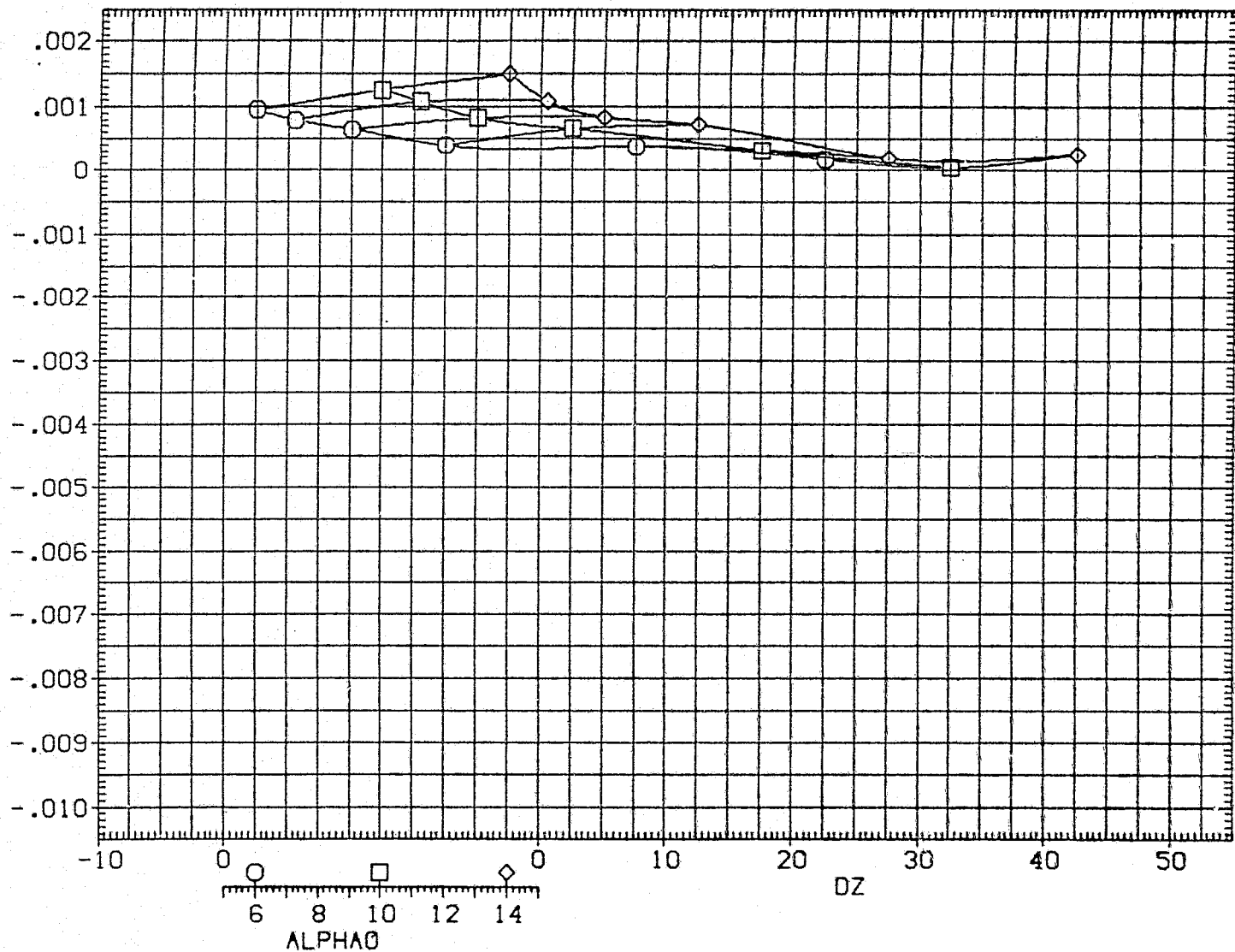


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2349.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

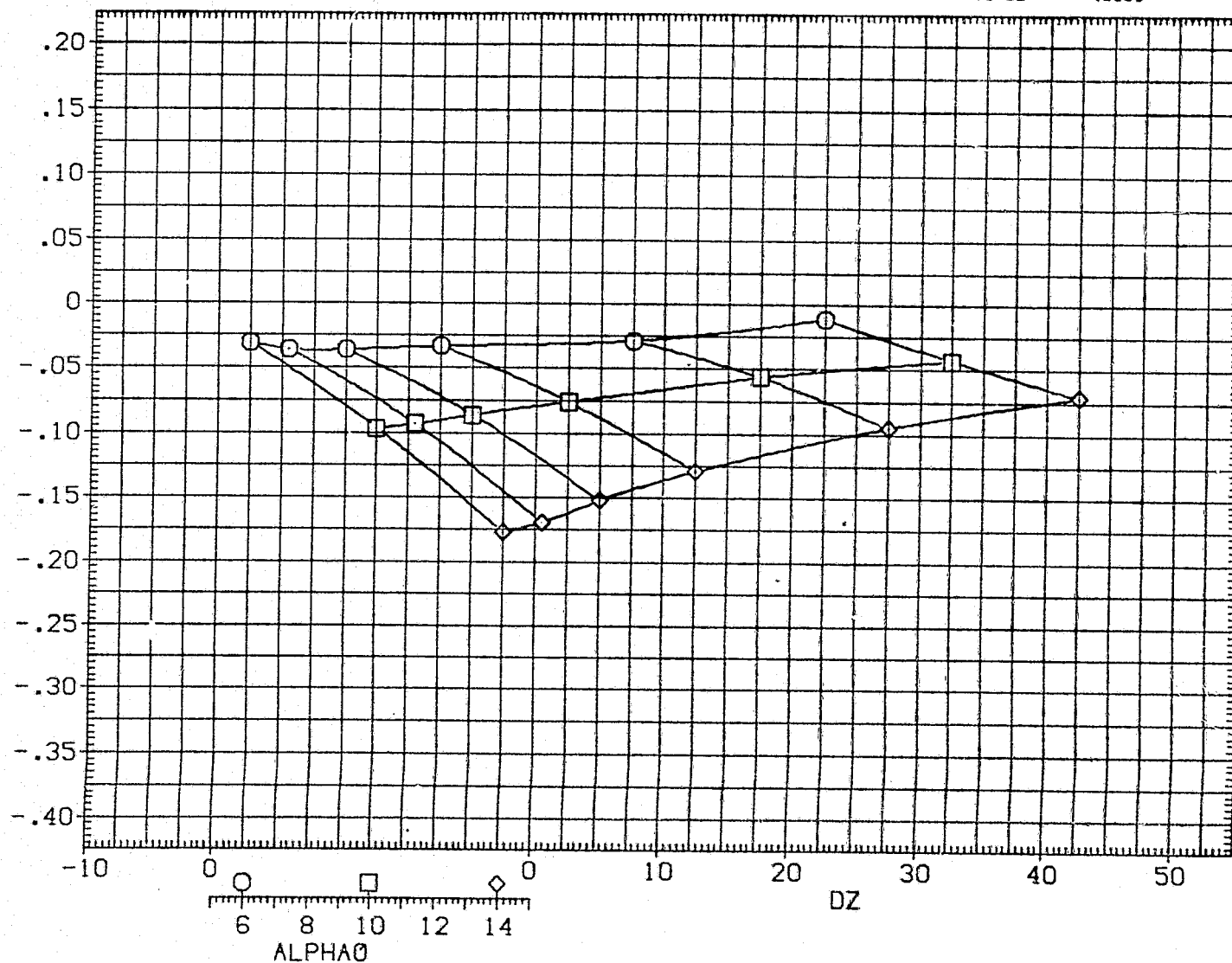


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (055 - 035) (6GN055)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SD.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

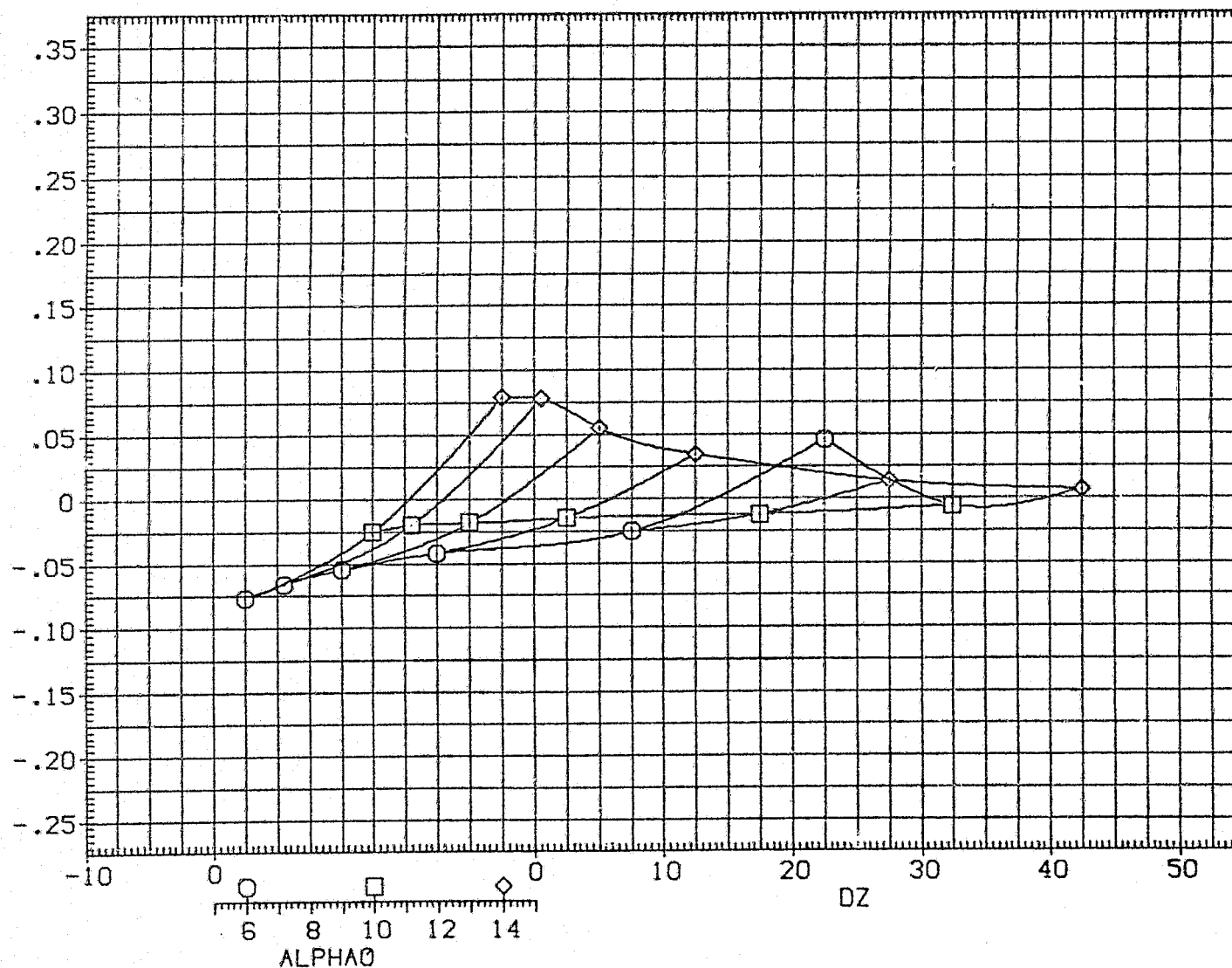


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

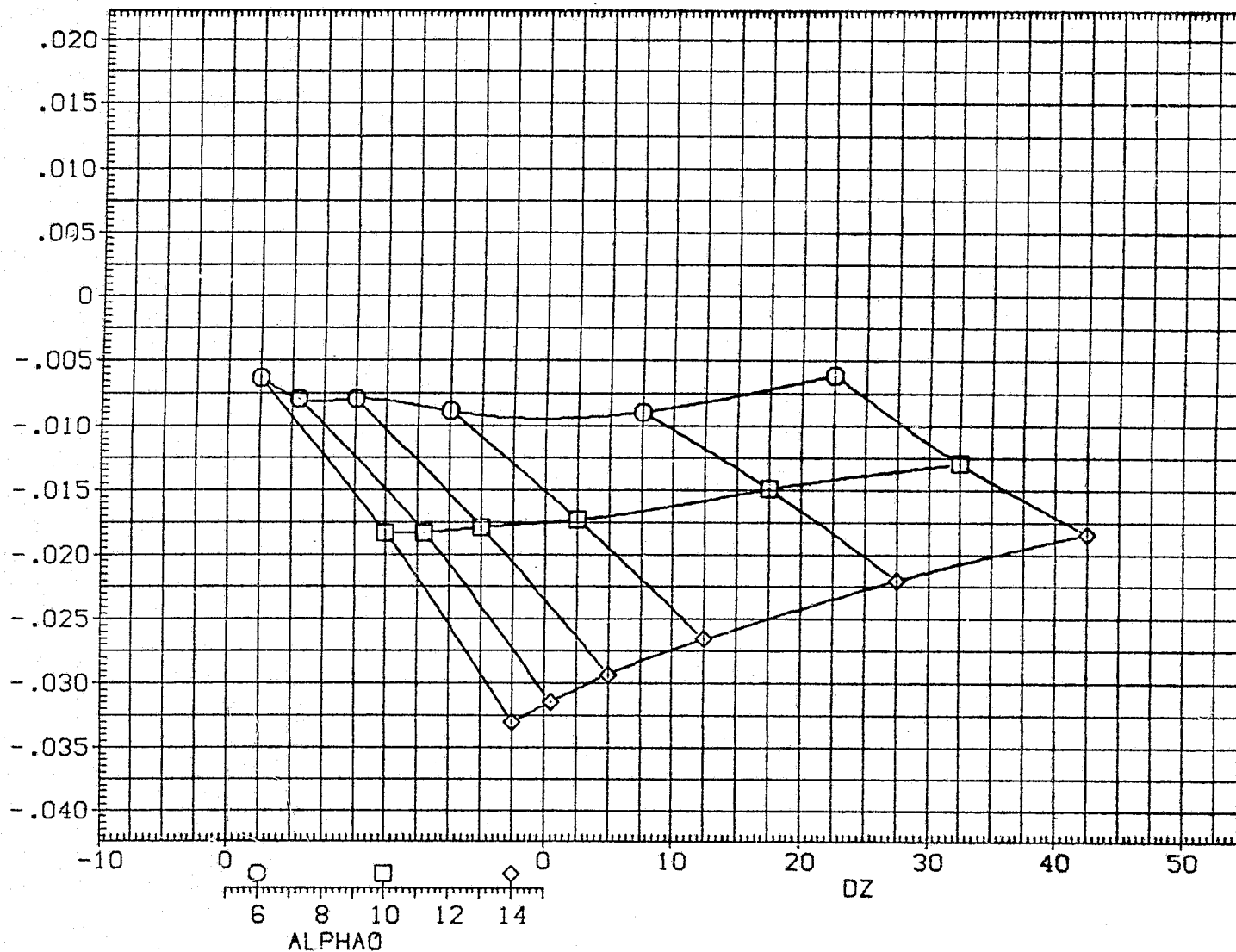


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (055 - 035) (66N055)

PARAMETRIC VALUES			
ALPHAC	3.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

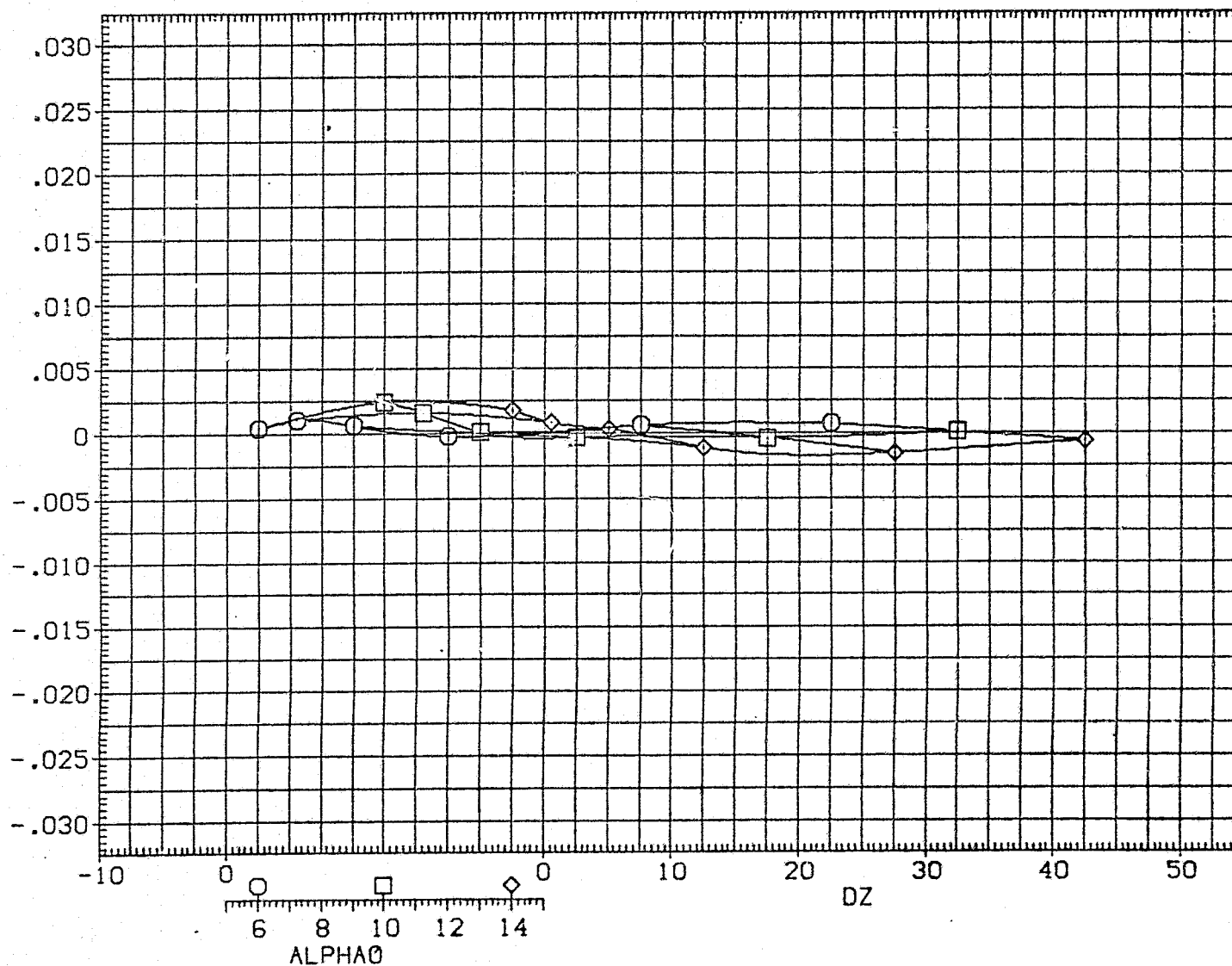


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN, (STABILITY AXIS)

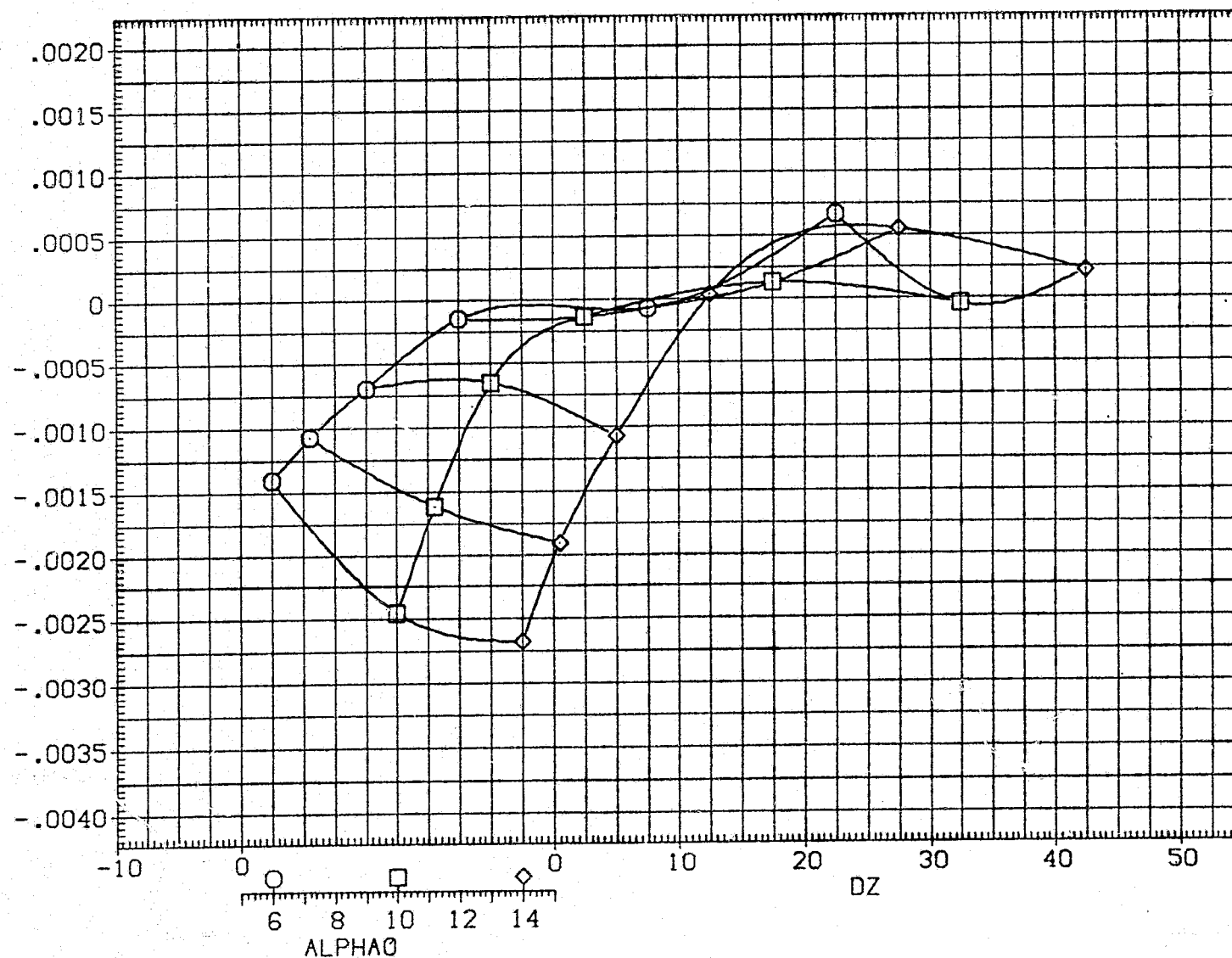


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (055 - 035) (6GN055)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

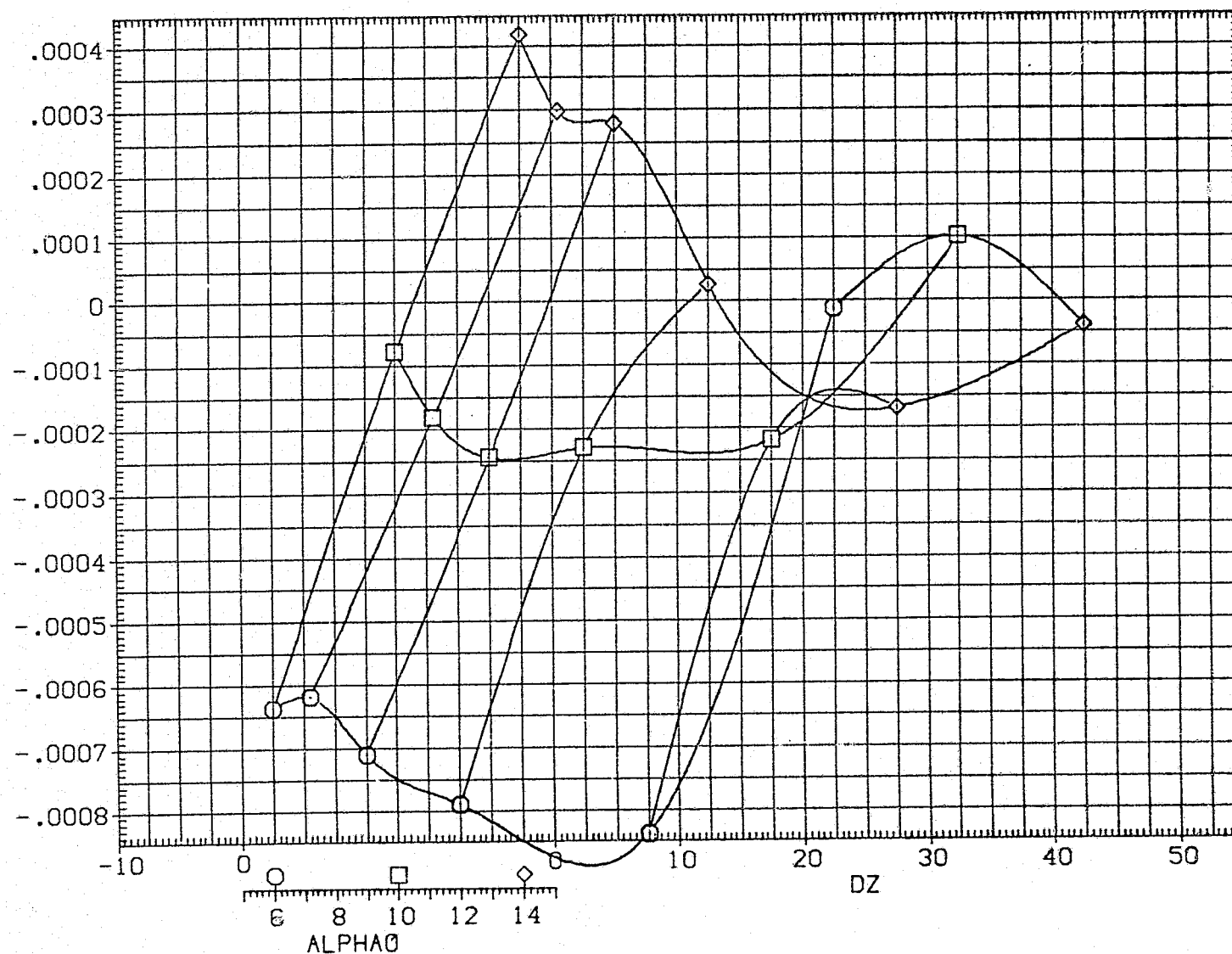


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (055 - 035)(6GN055)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

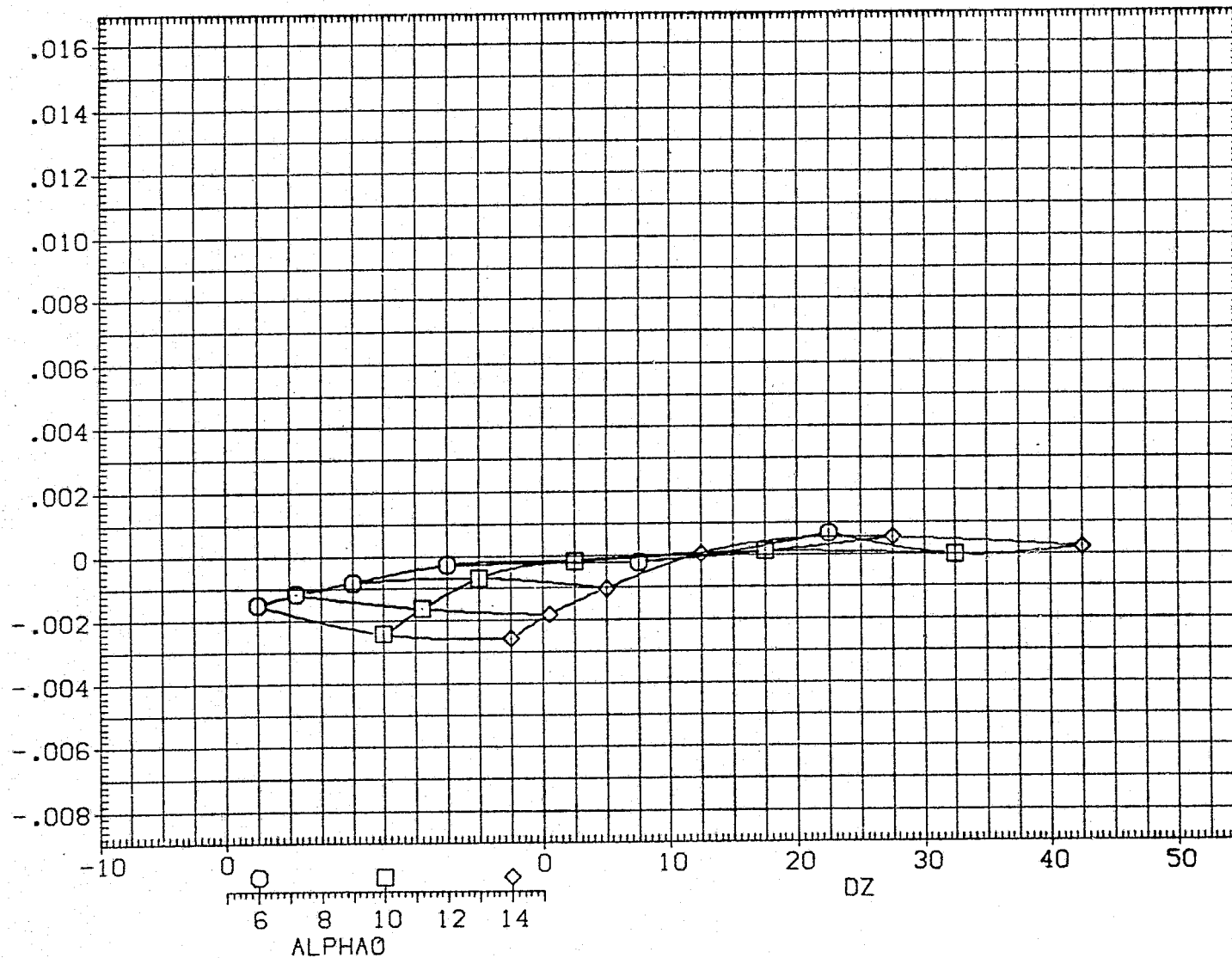


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1) D/S (055 - 035) (6GNO55)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

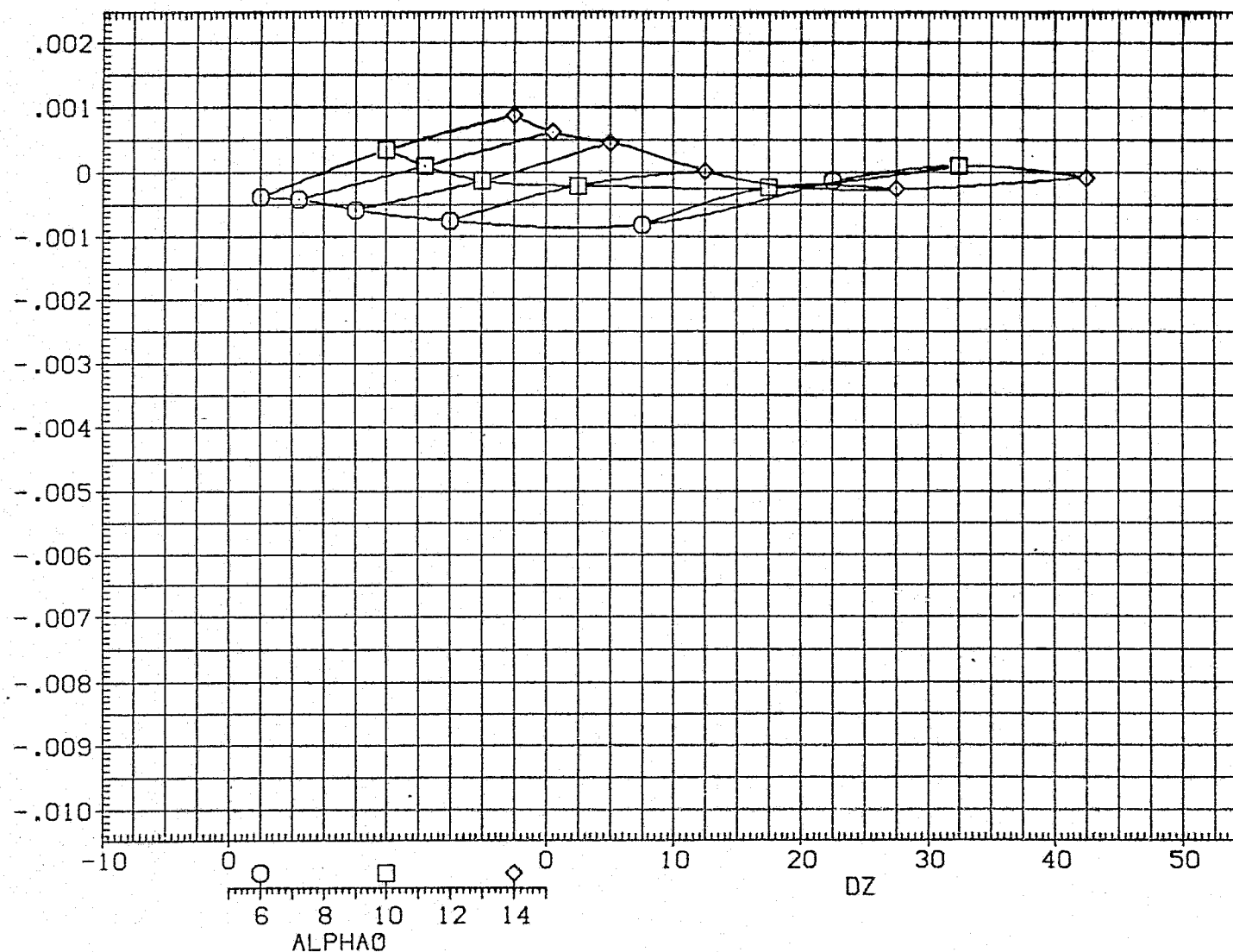


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

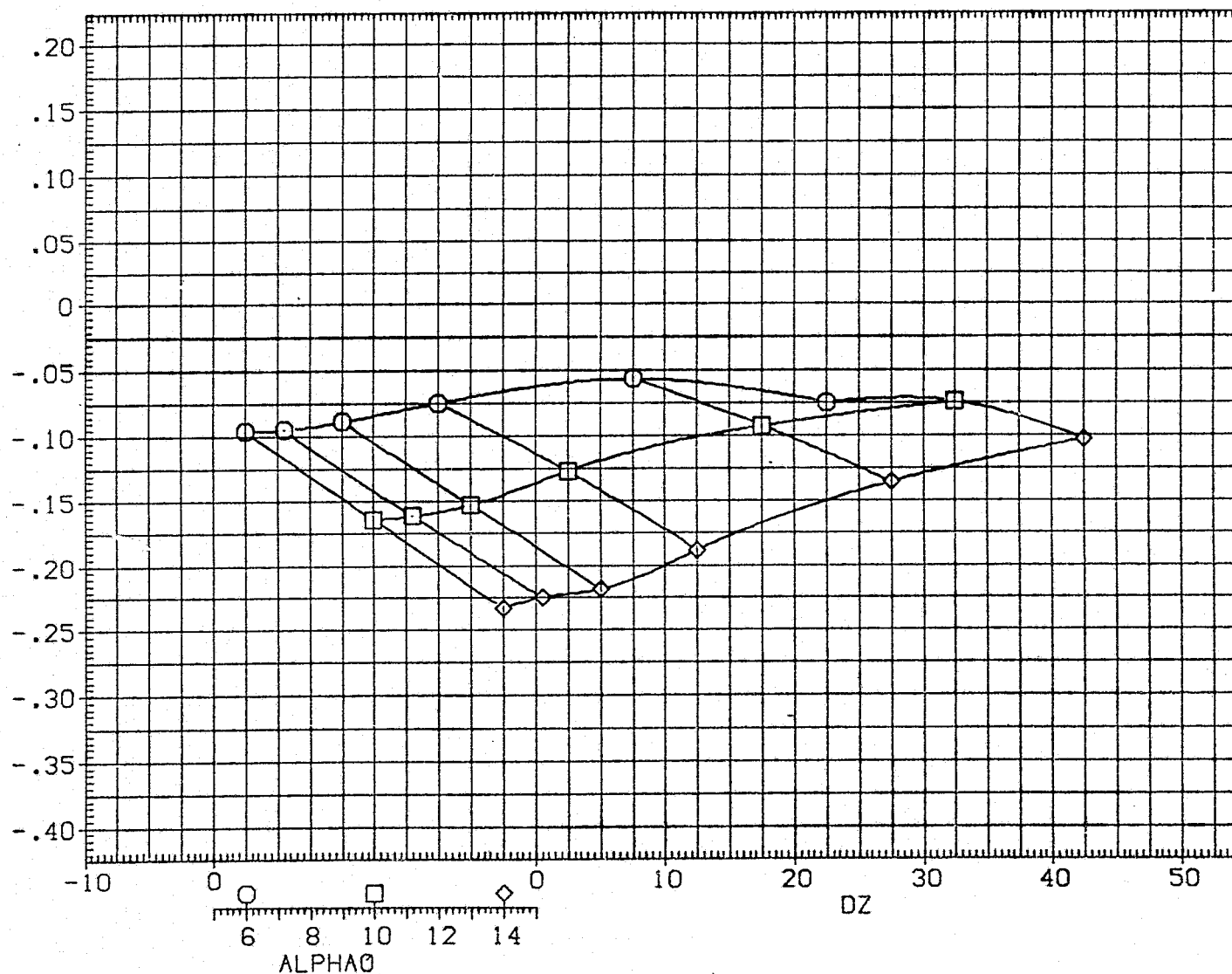


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1) D/S (050 - 035) (6GN050)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
OY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

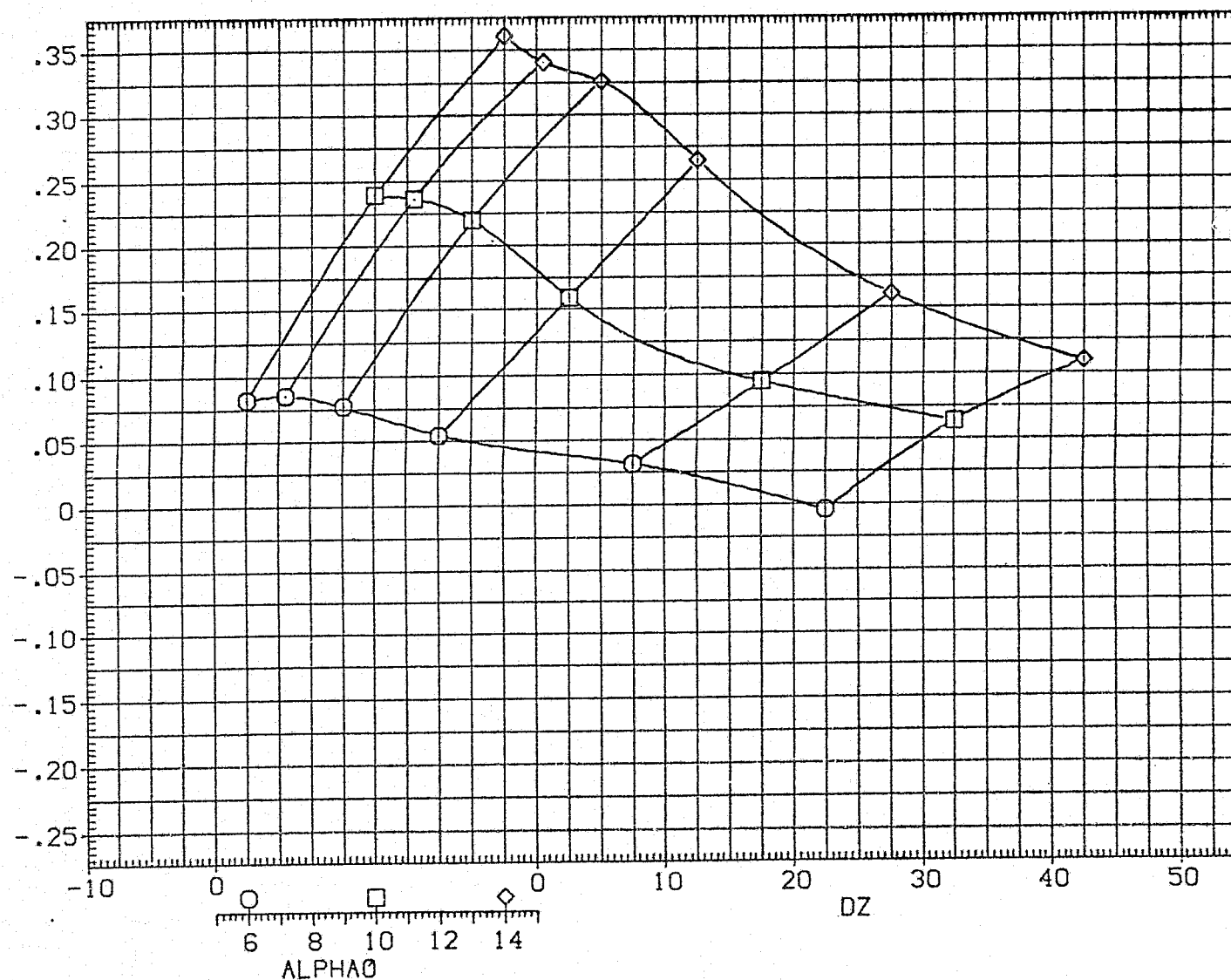


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (050 - 035) (6GN050)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2349.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

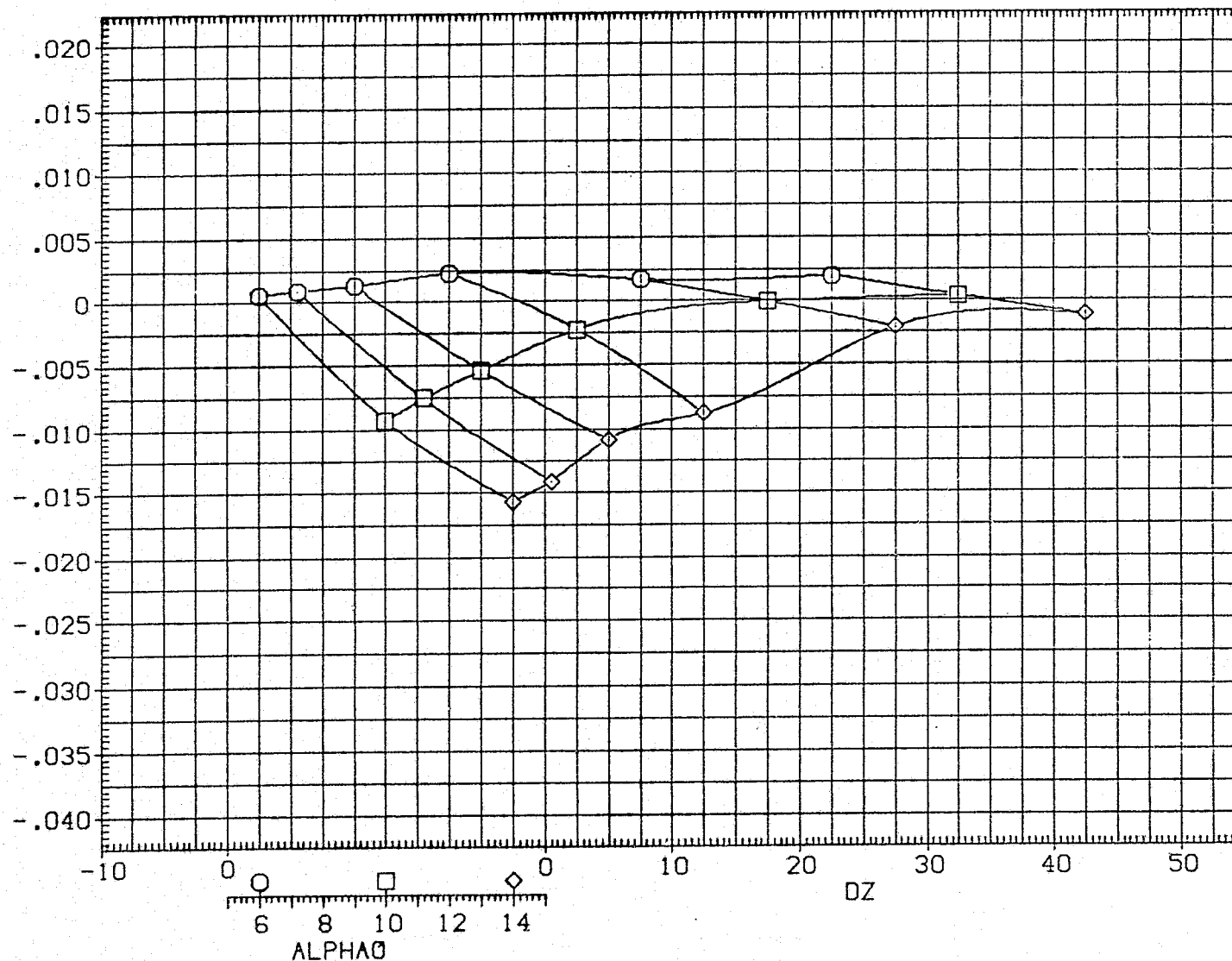


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (050 - 035)(6GN050)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

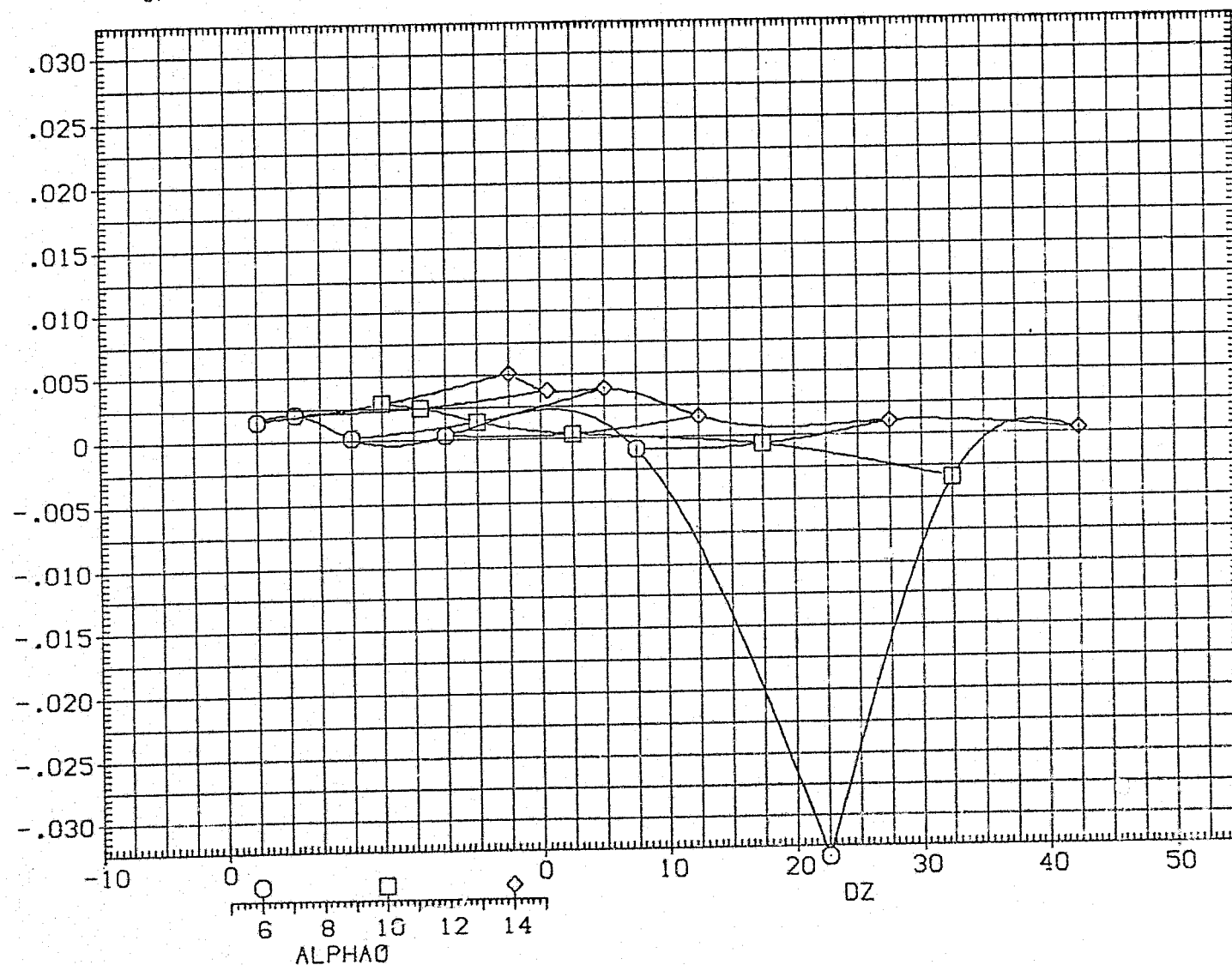


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (050 - 035) (6GN050)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN, (STABILITY AXIS)

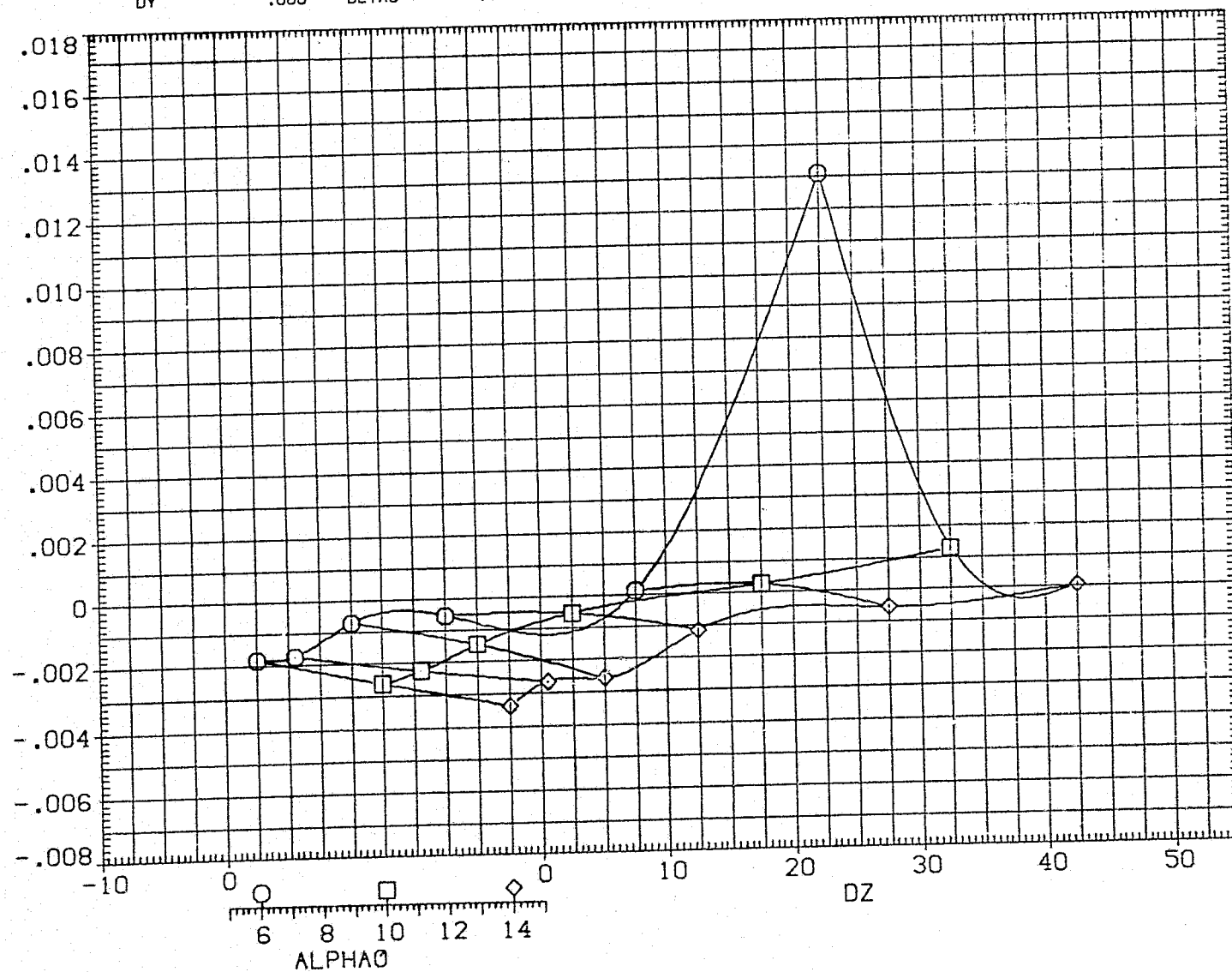


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (050 - 035)(6GN050)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

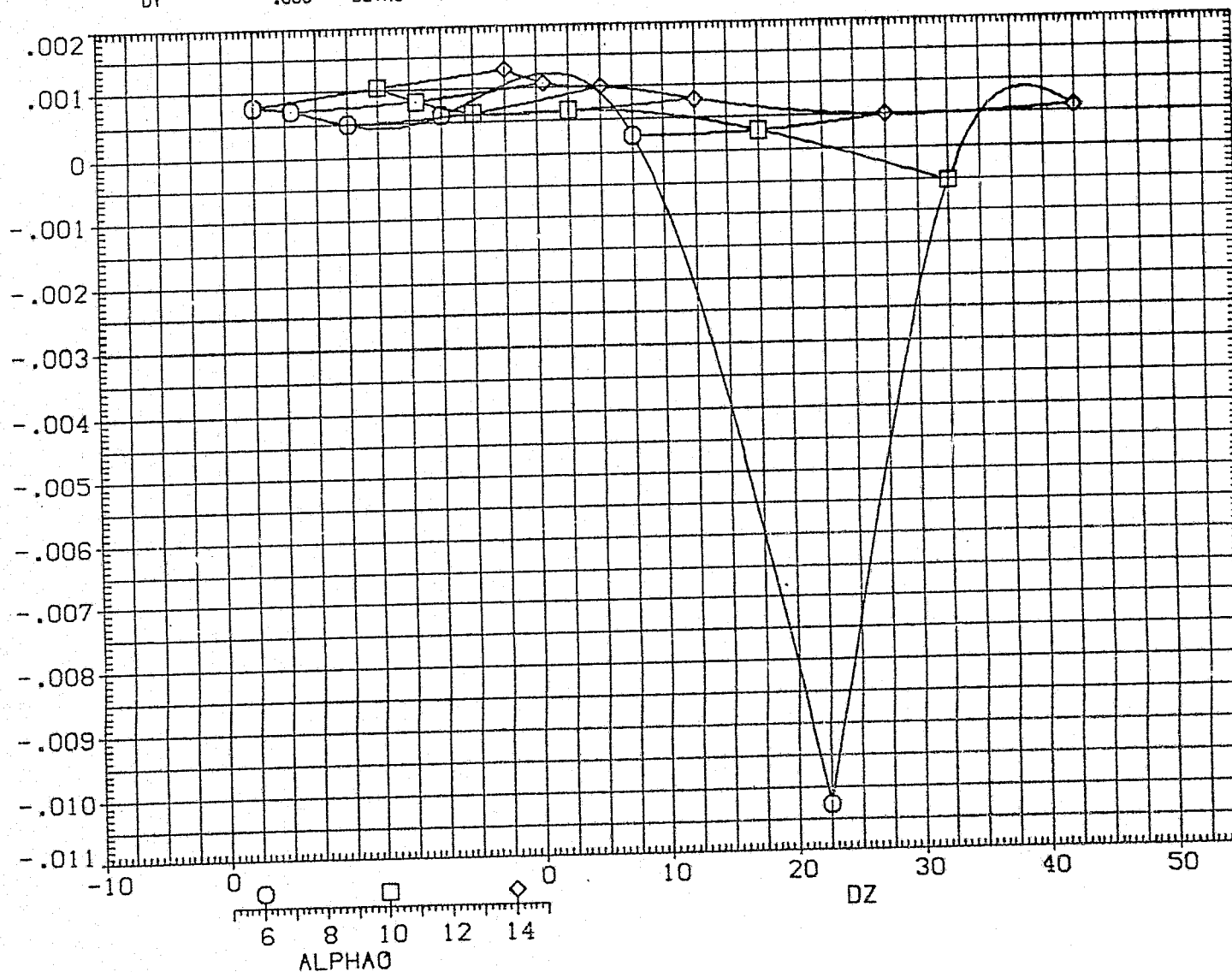


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (050 - 035) (6GN050)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

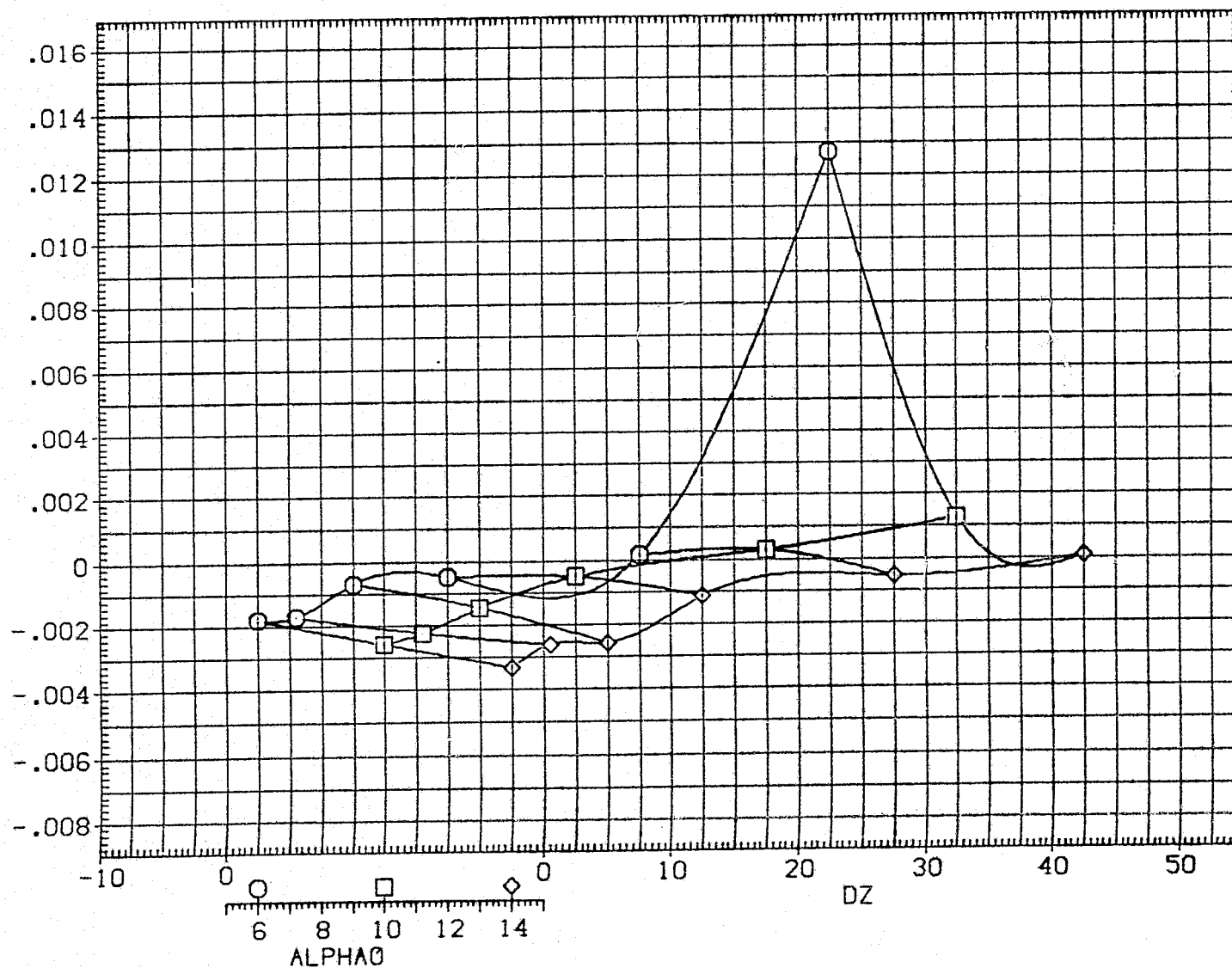


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1) D/S (050 - 035) (6GN050)

PARAMETRIC VALUES			
ALPHA0	.000	BETA0	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

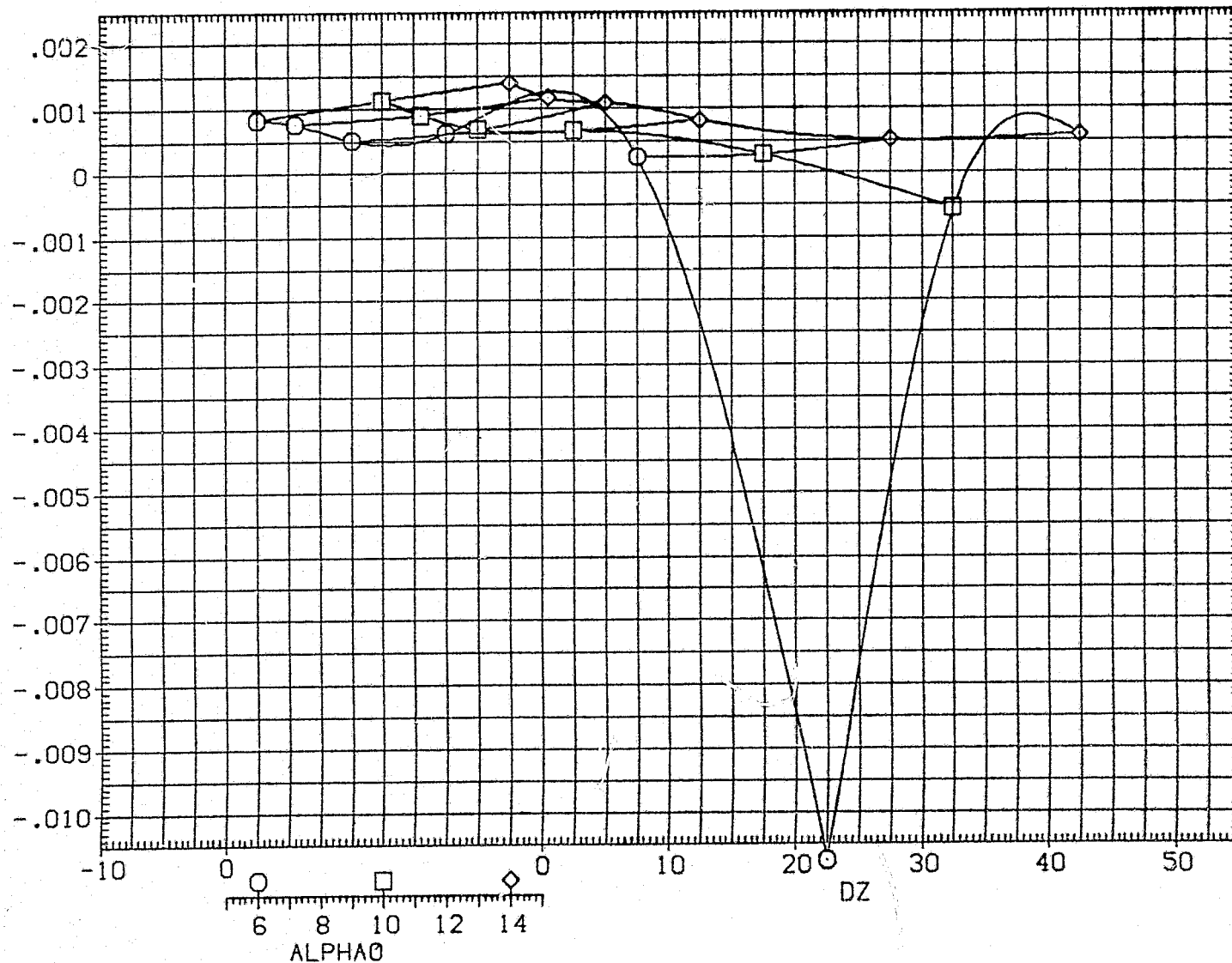


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETA0 = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (053 - 035)(6GN053)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
OY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7300	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

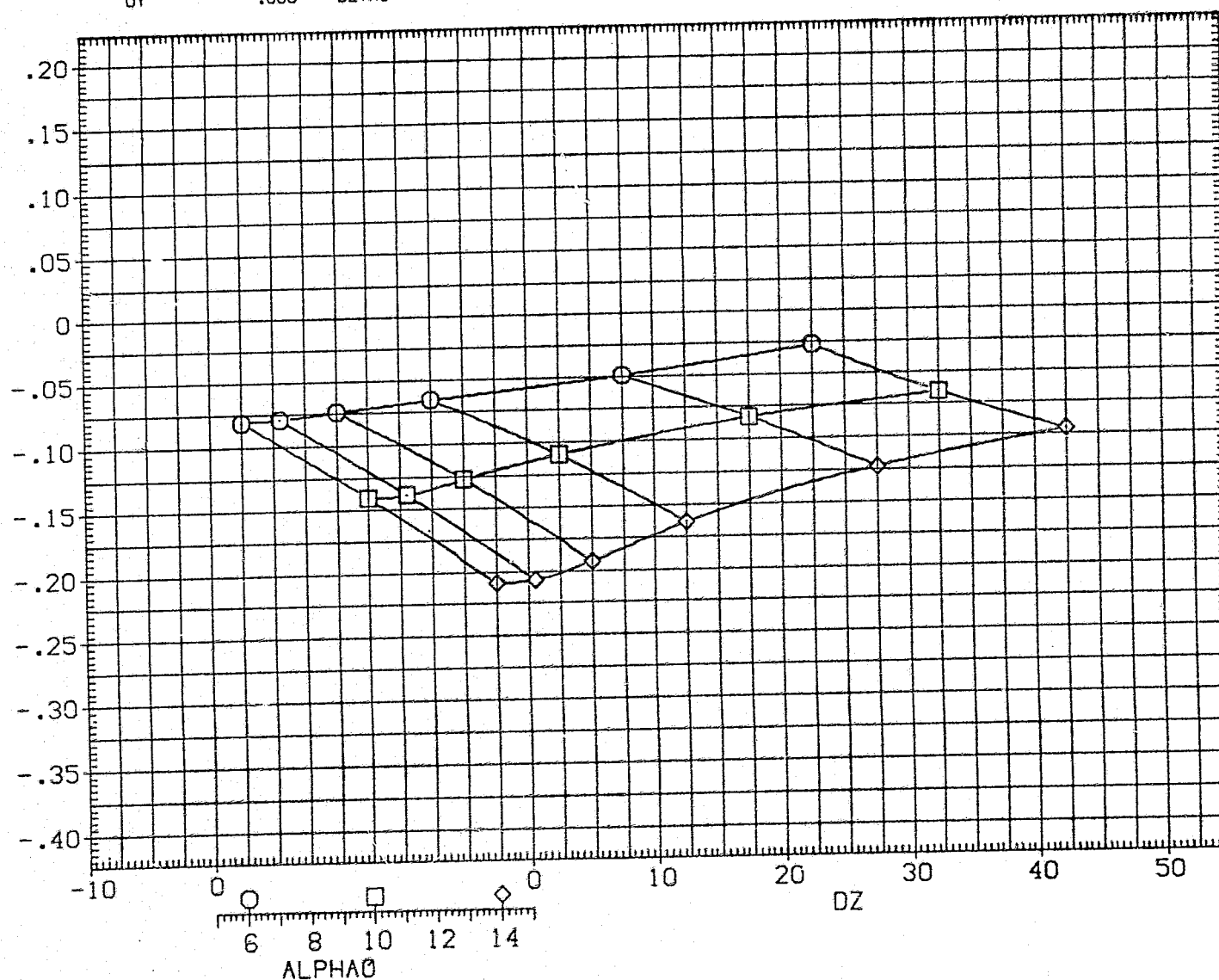


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (053 - 035) (6GN053)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

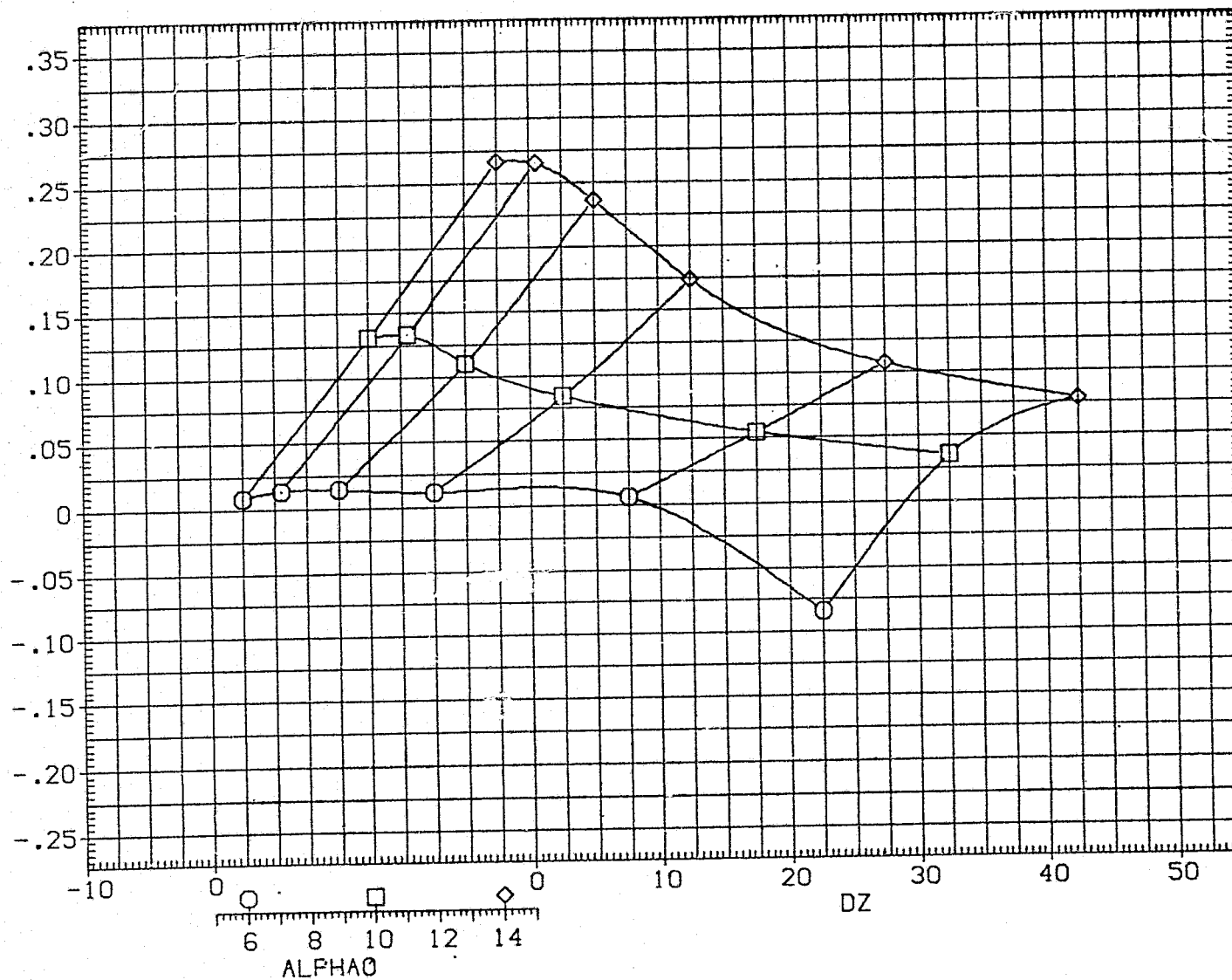


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (053 - 035)(6GN053)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

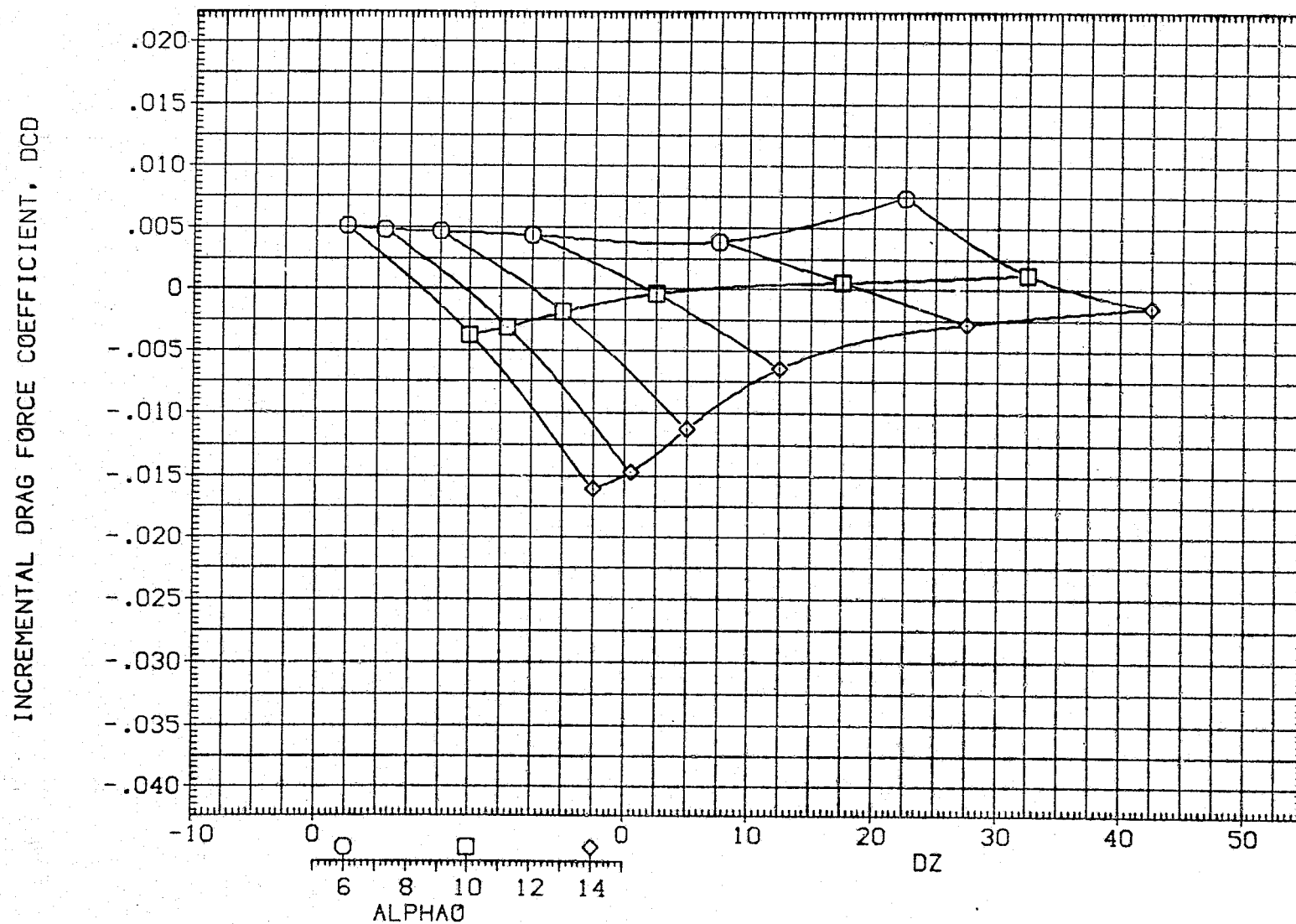


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (053 - 035)(6GN053)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
RY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

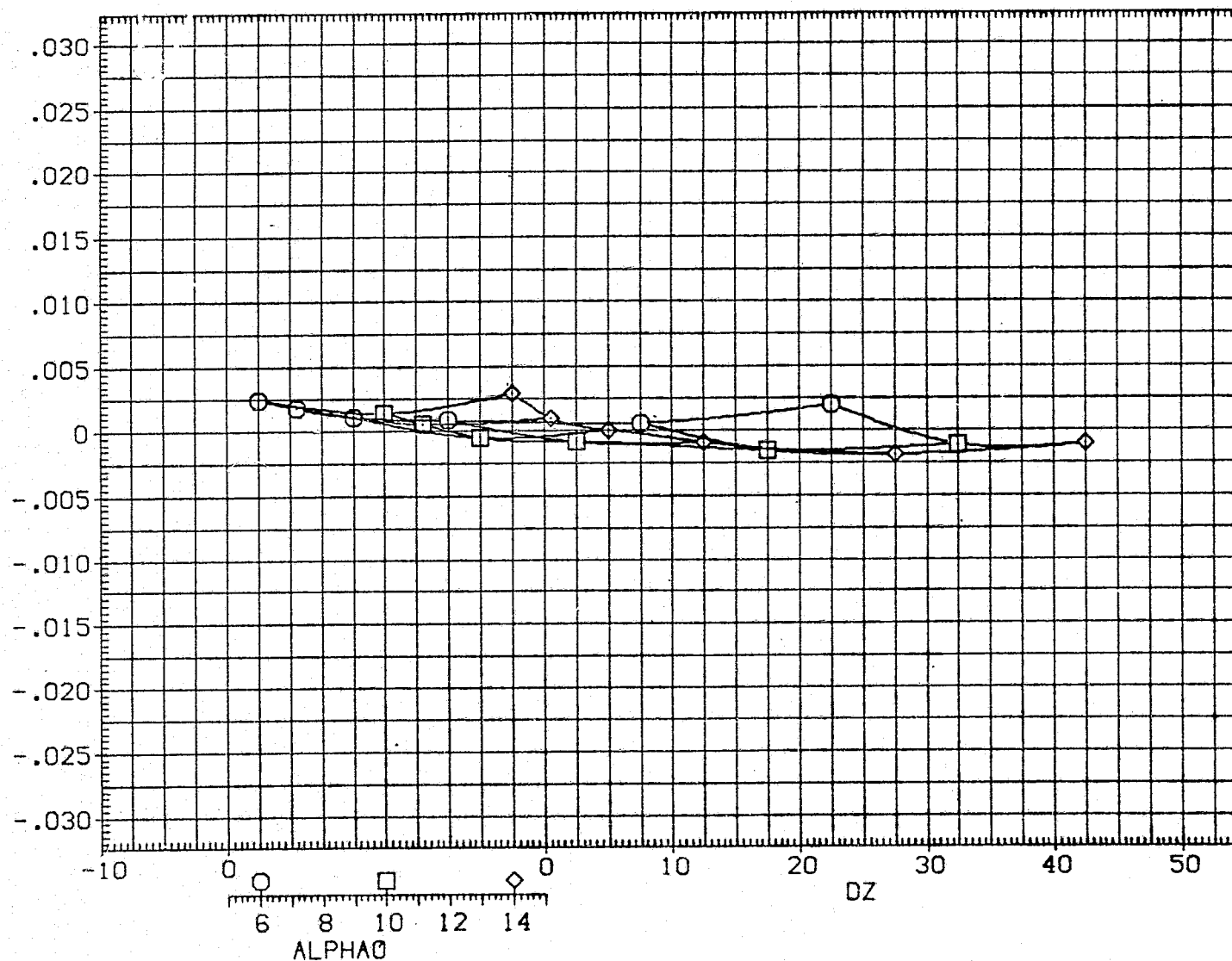


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN. (STABILITY AXIS)

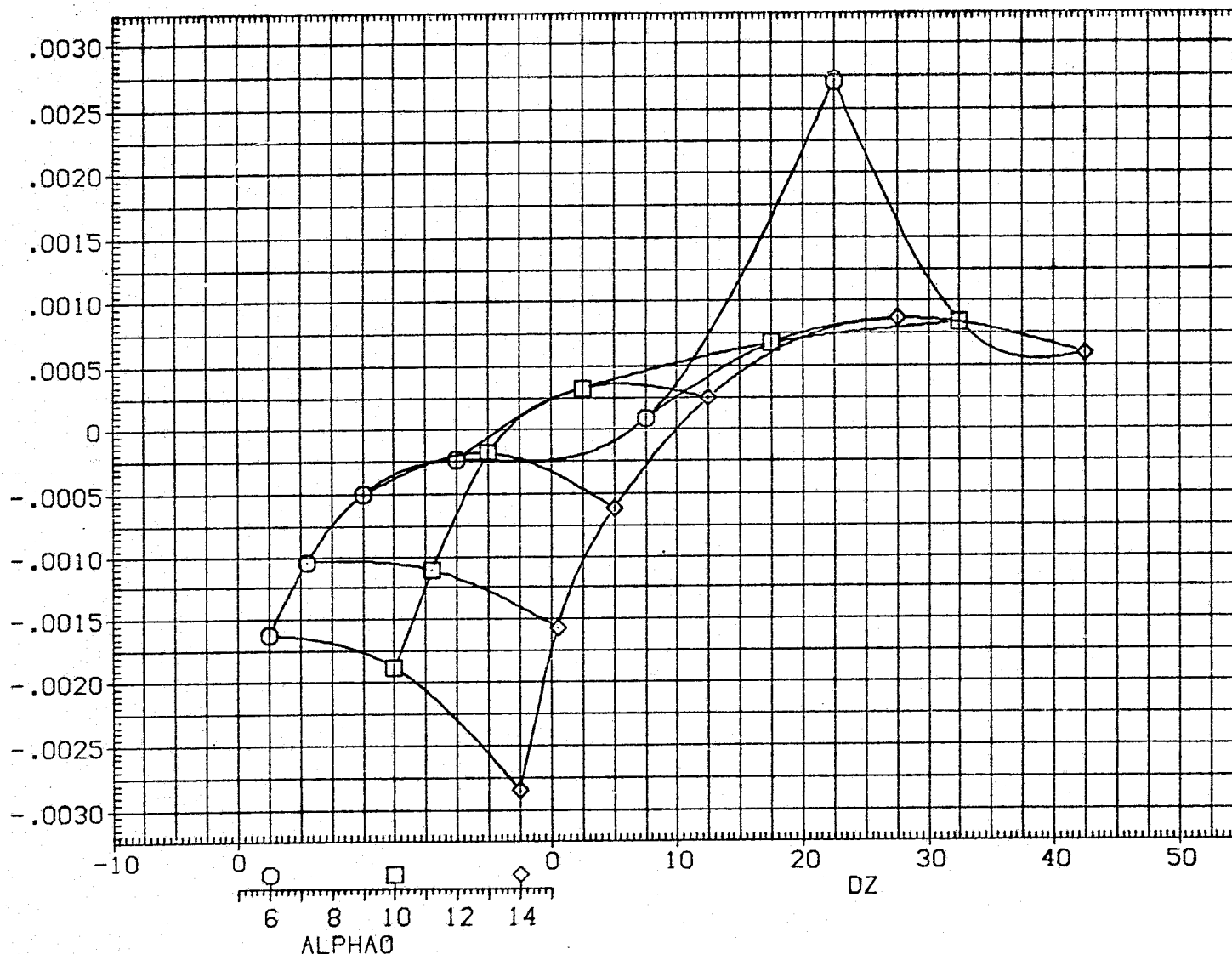


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (053 - 035) (6GN053)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

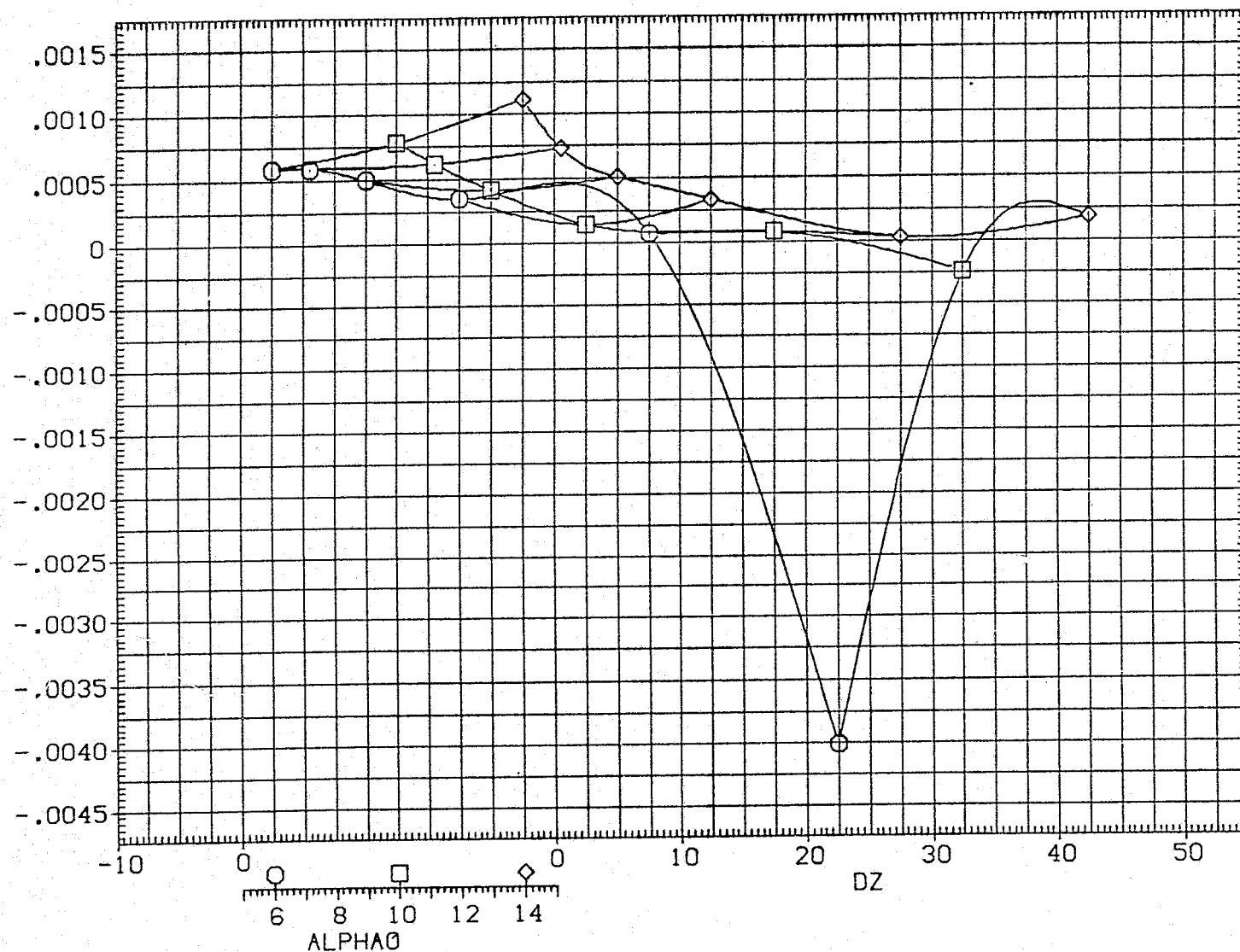


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

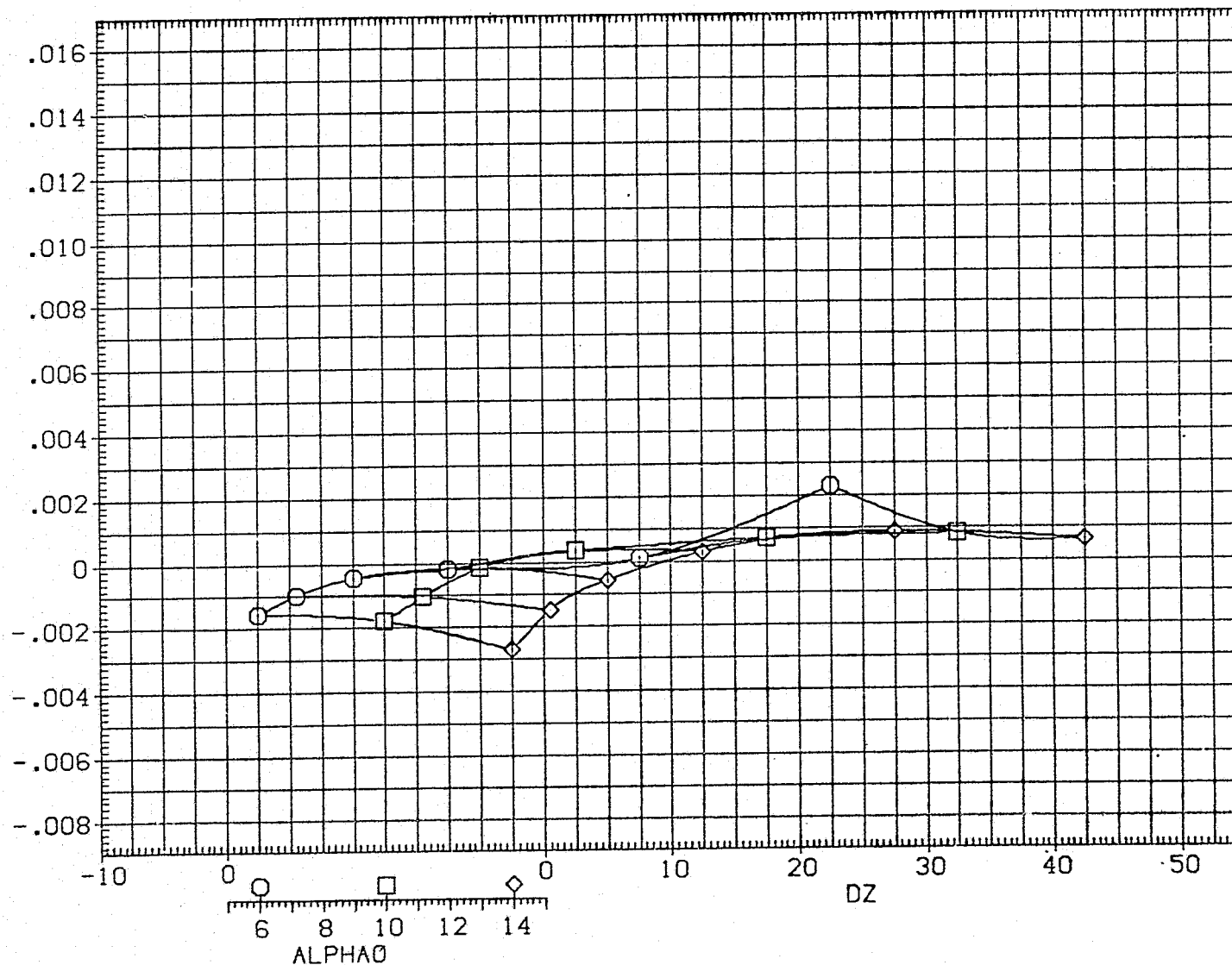


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1) D/S (053 - 035) (6GN053)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

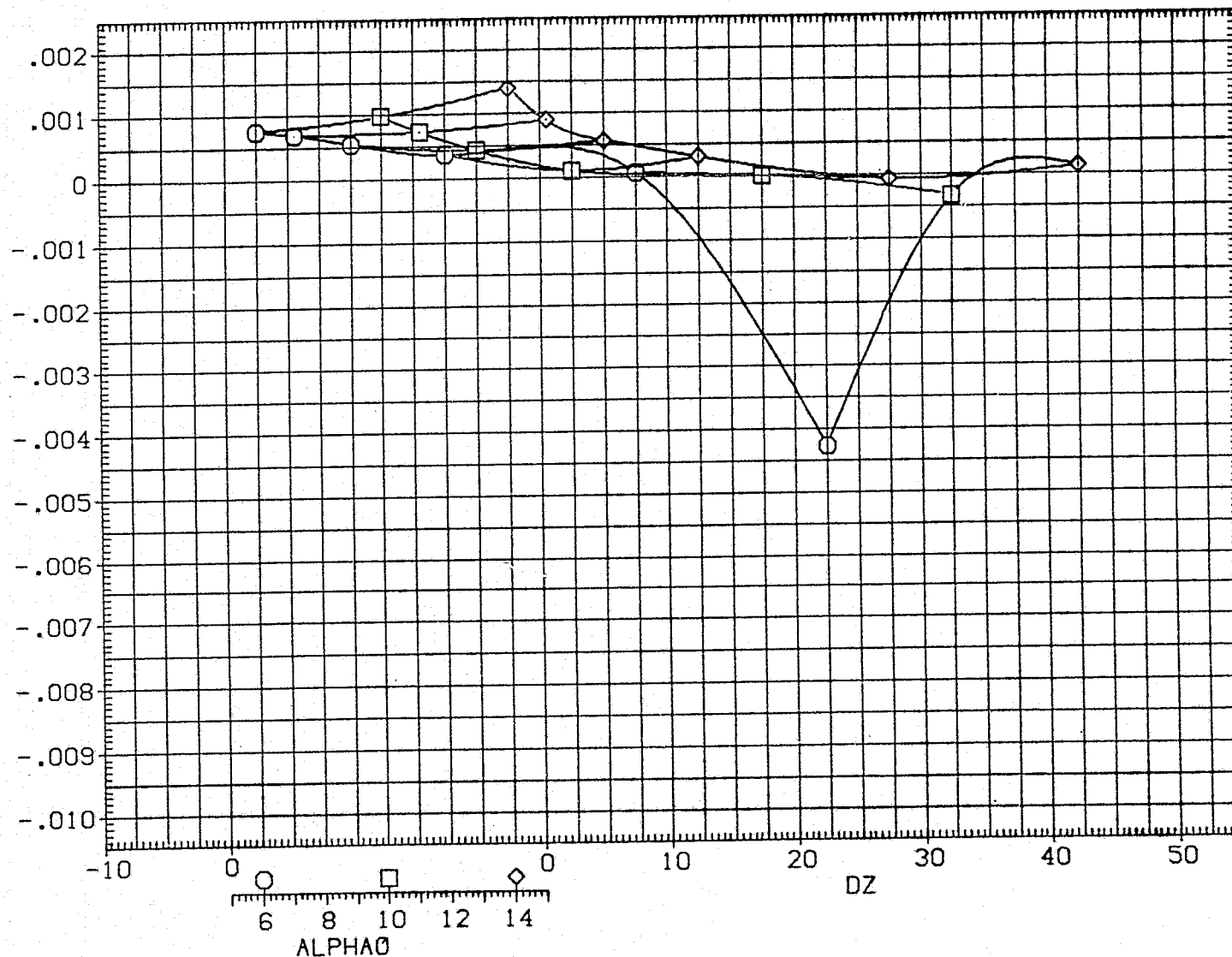


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

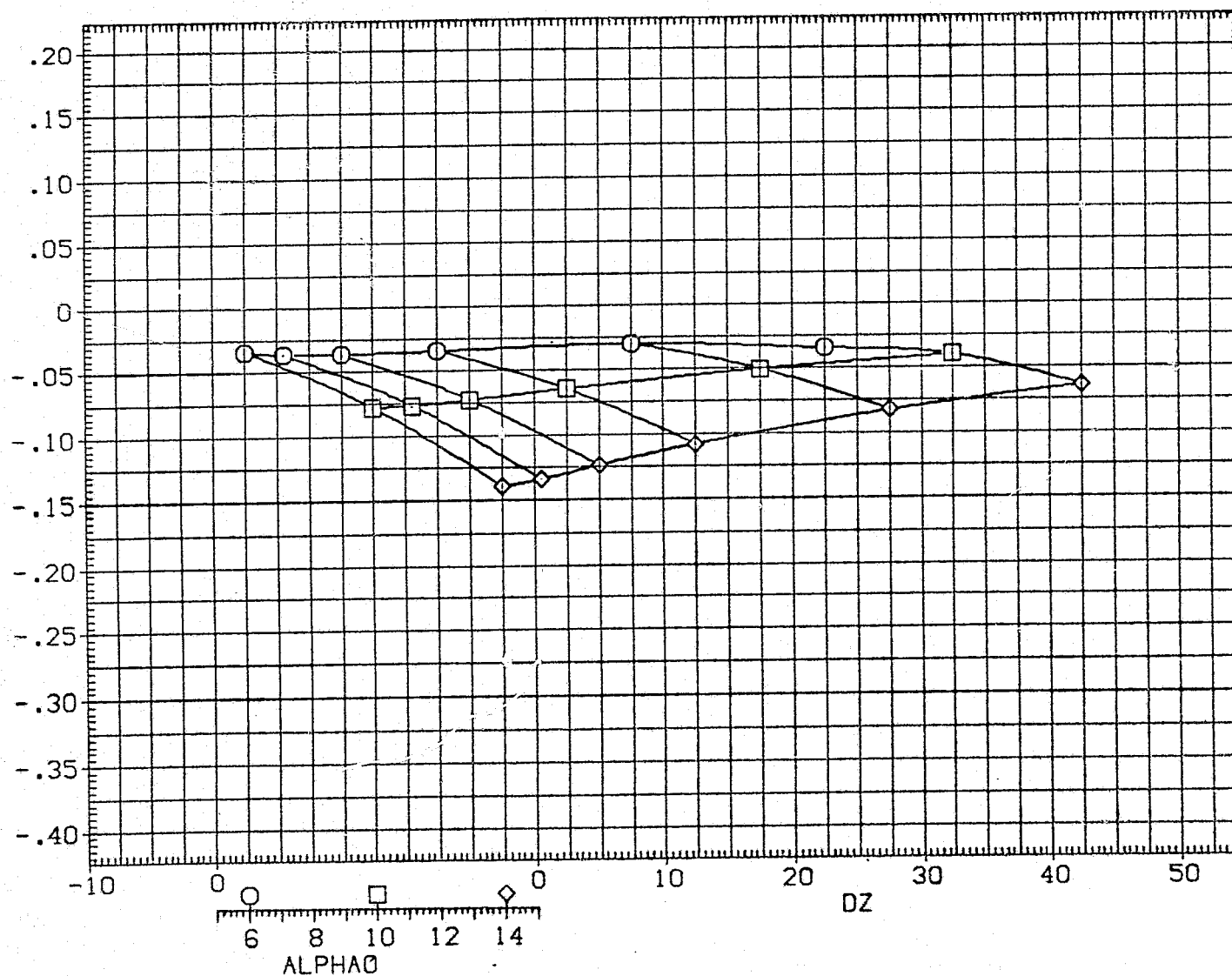


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (056 - 035) (6GN056)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

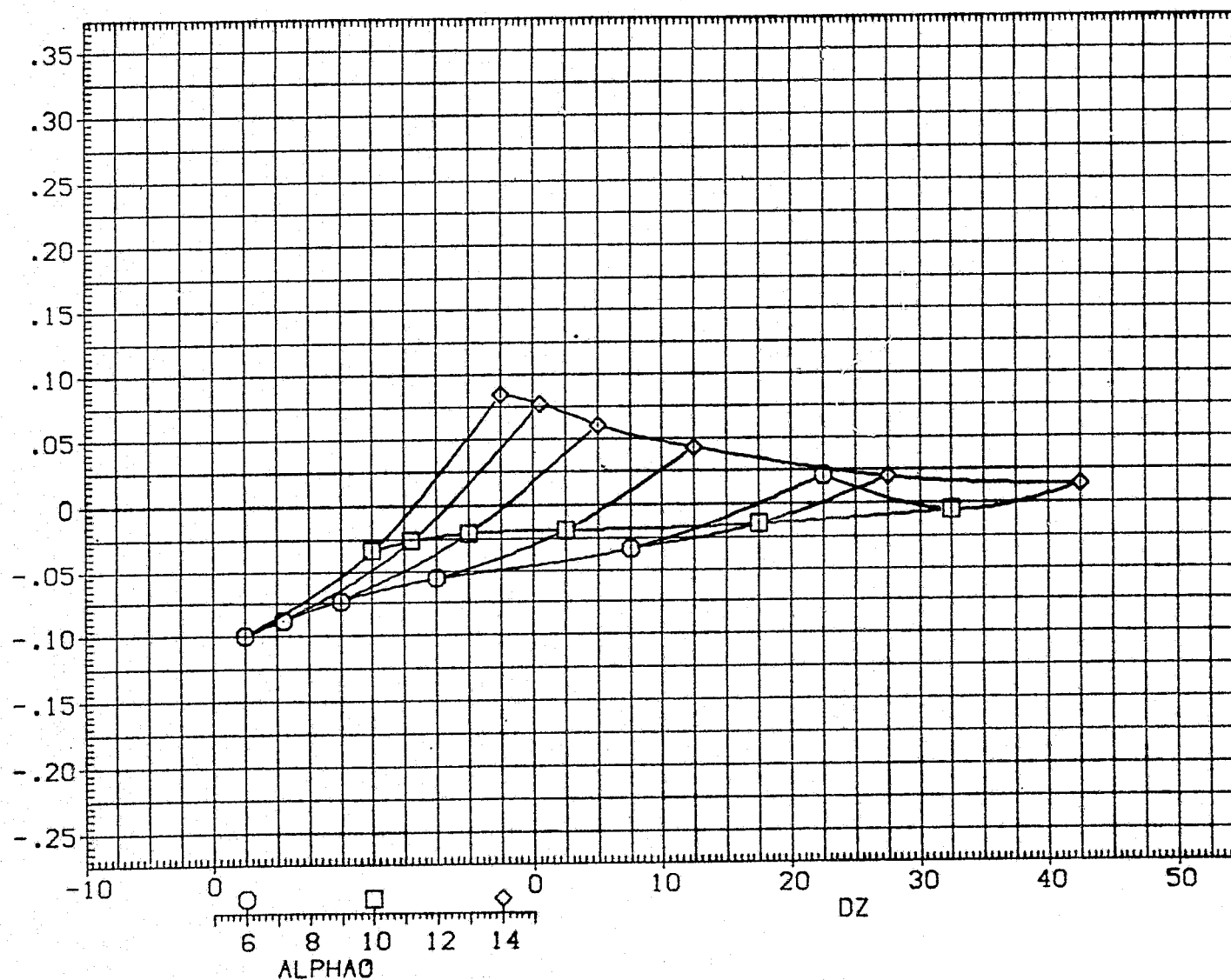


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

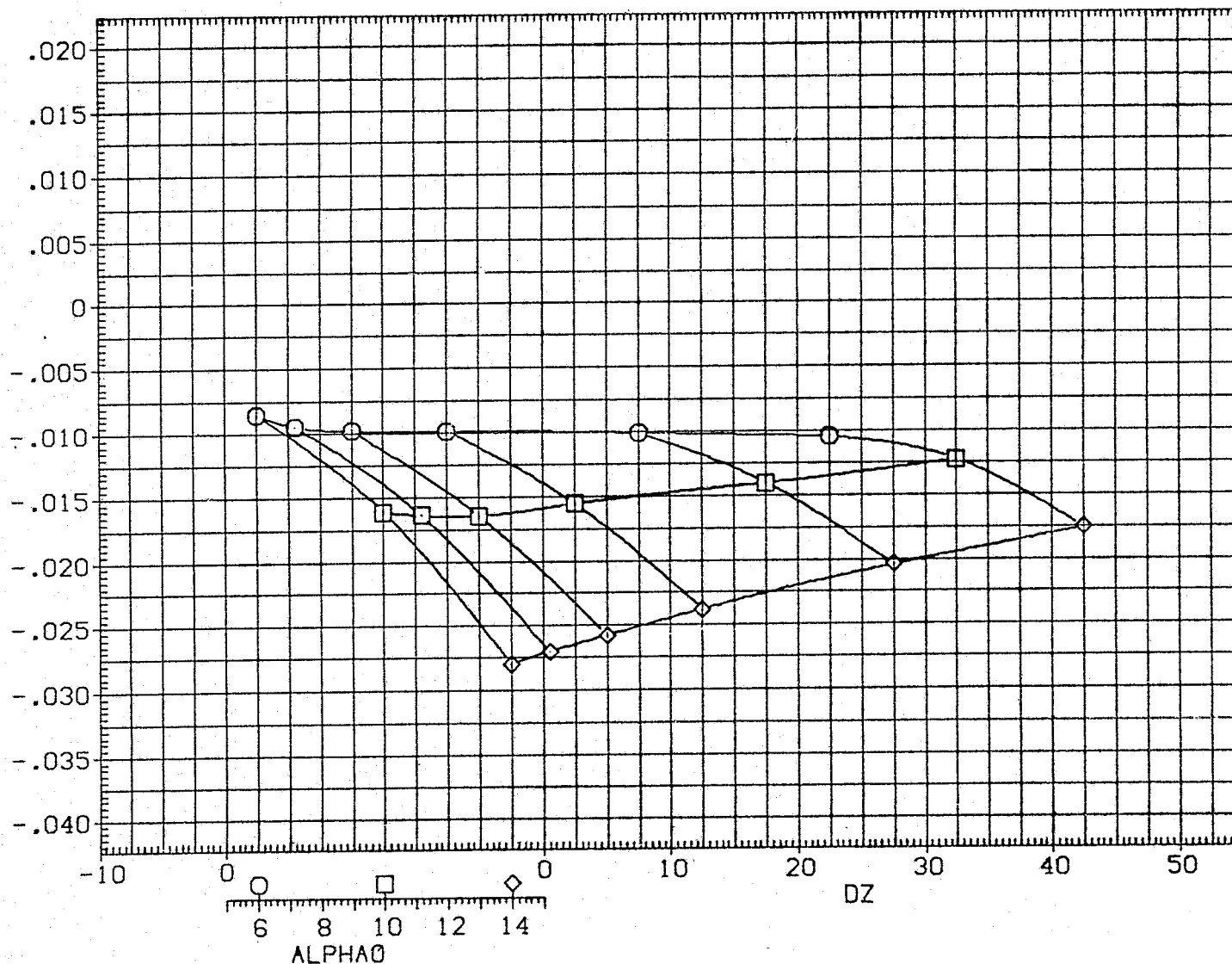


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (056 - 035)(6GN056)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

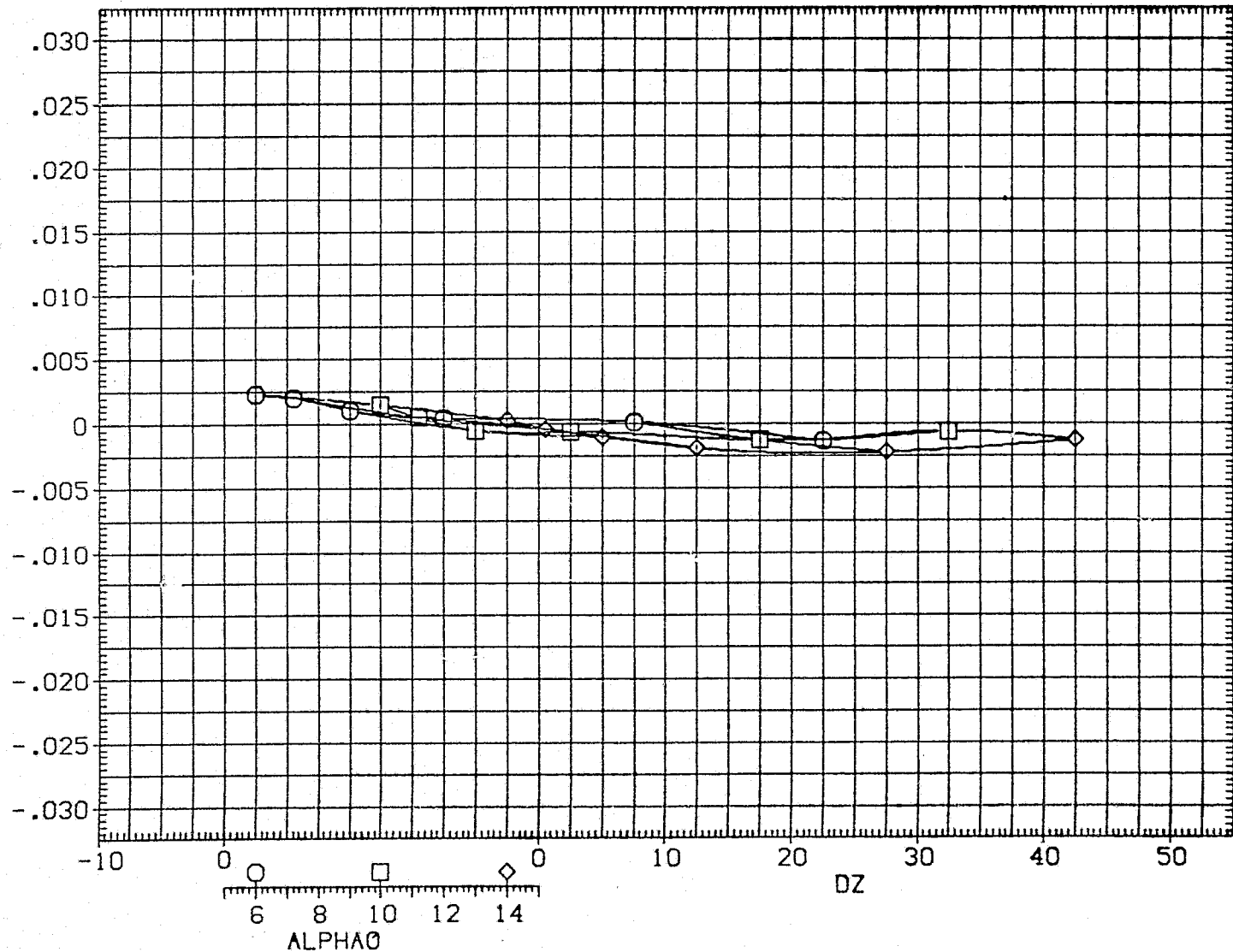


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (056 - 035) (6GN056)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN, (STABILITY AXIS)

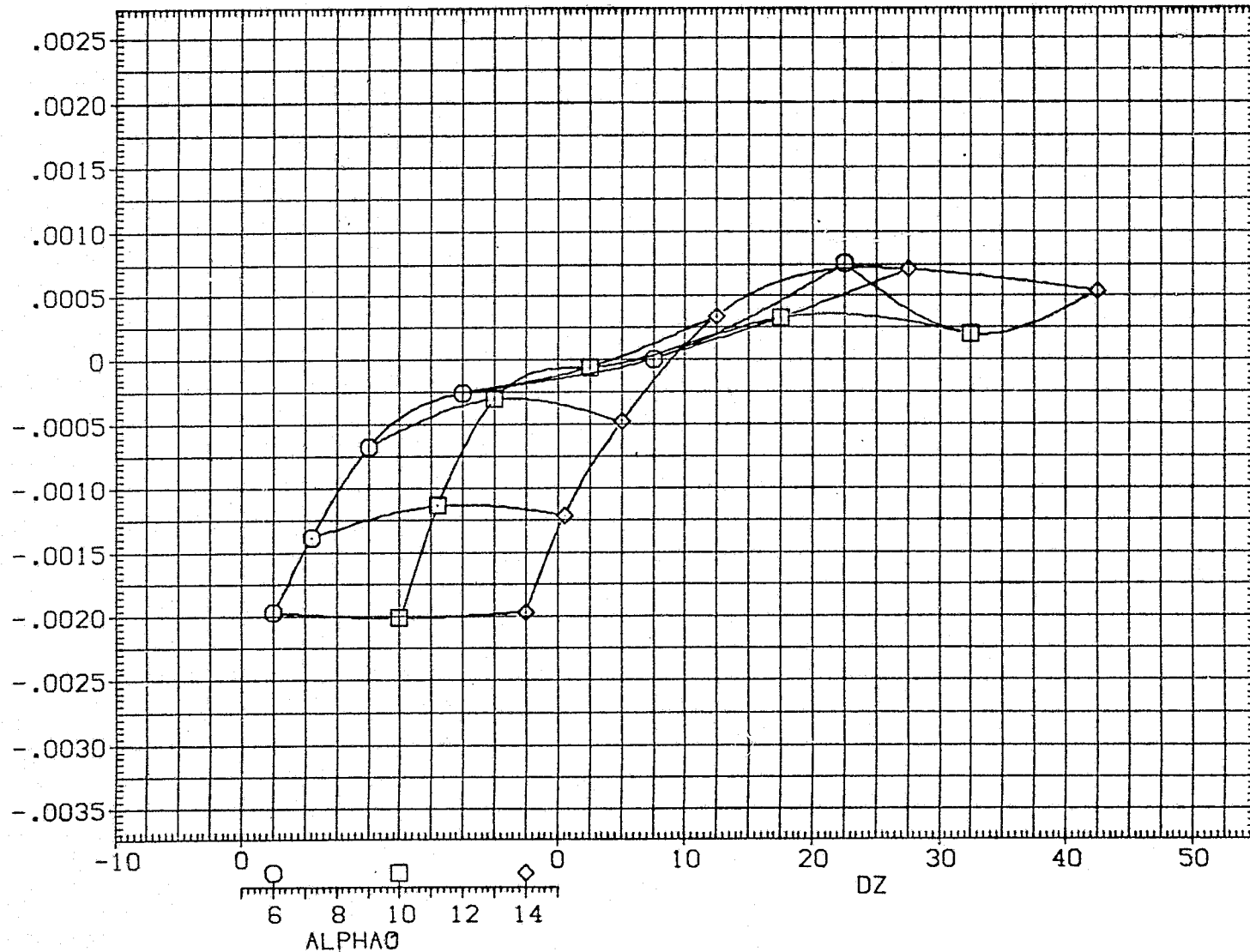


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (056 - 035)(6GN056)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

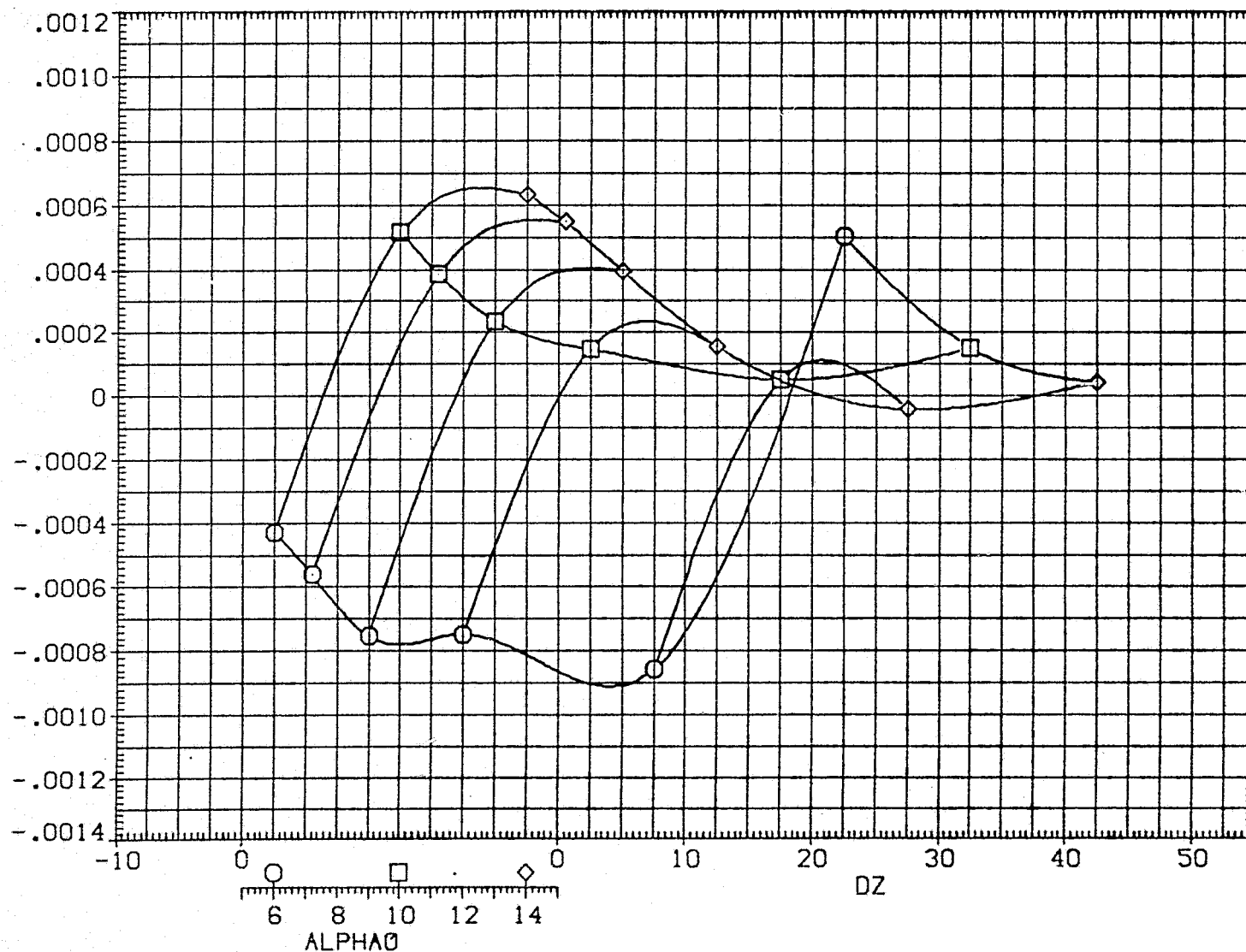


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (056 - 035) (6GN056)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

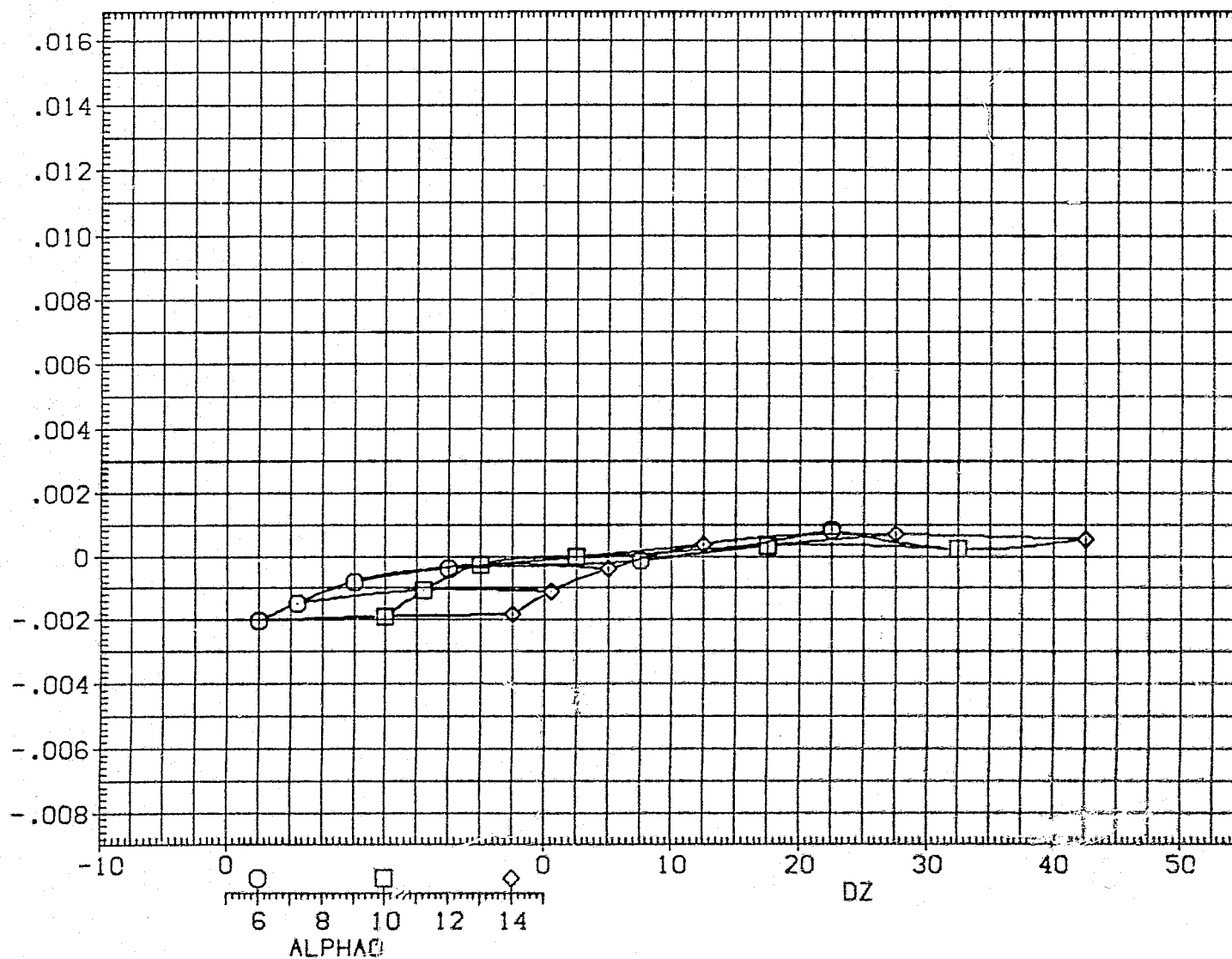


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (056 - 035)(66N056)

PARAMETRIC VALUES

ALPHA0	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

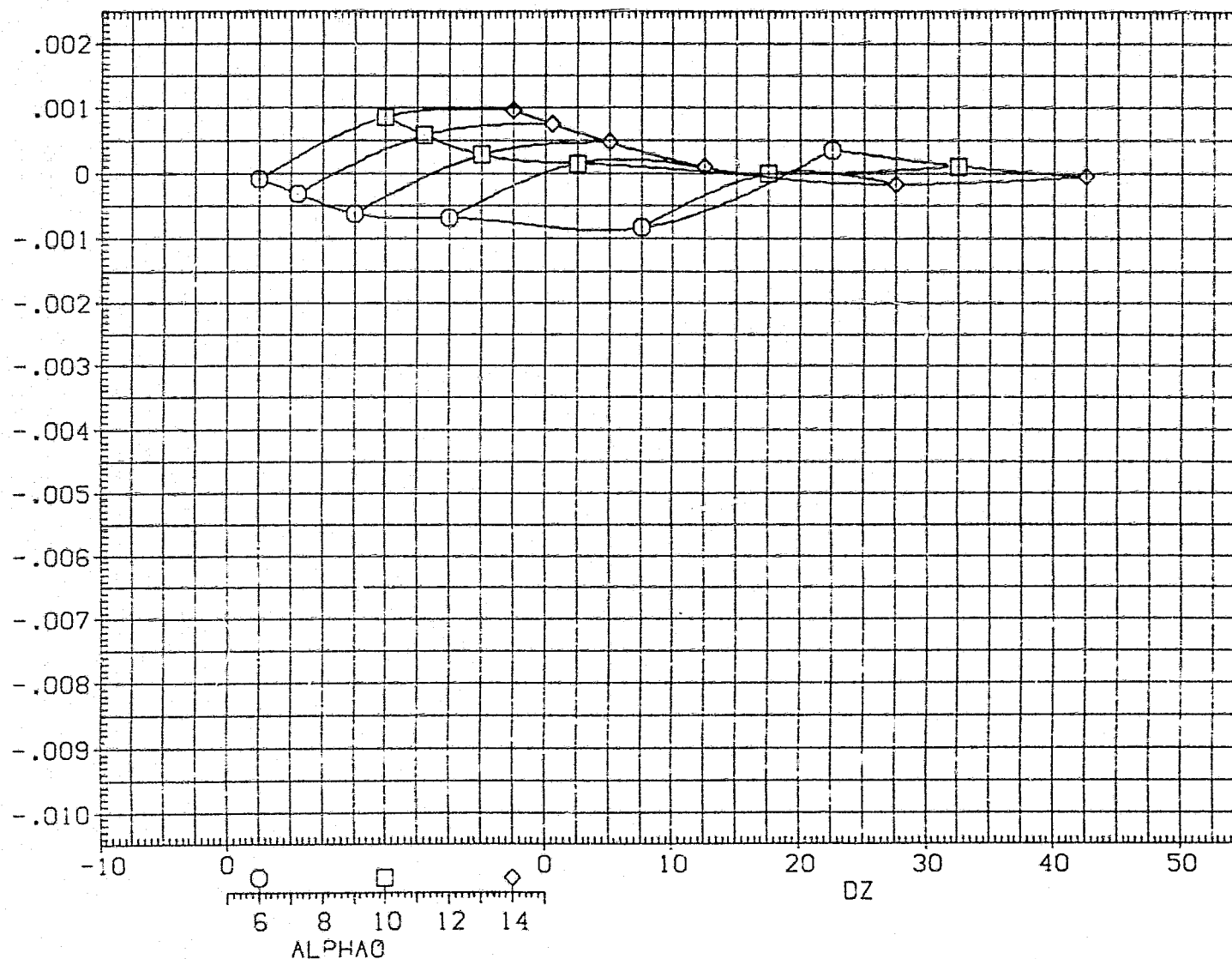


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

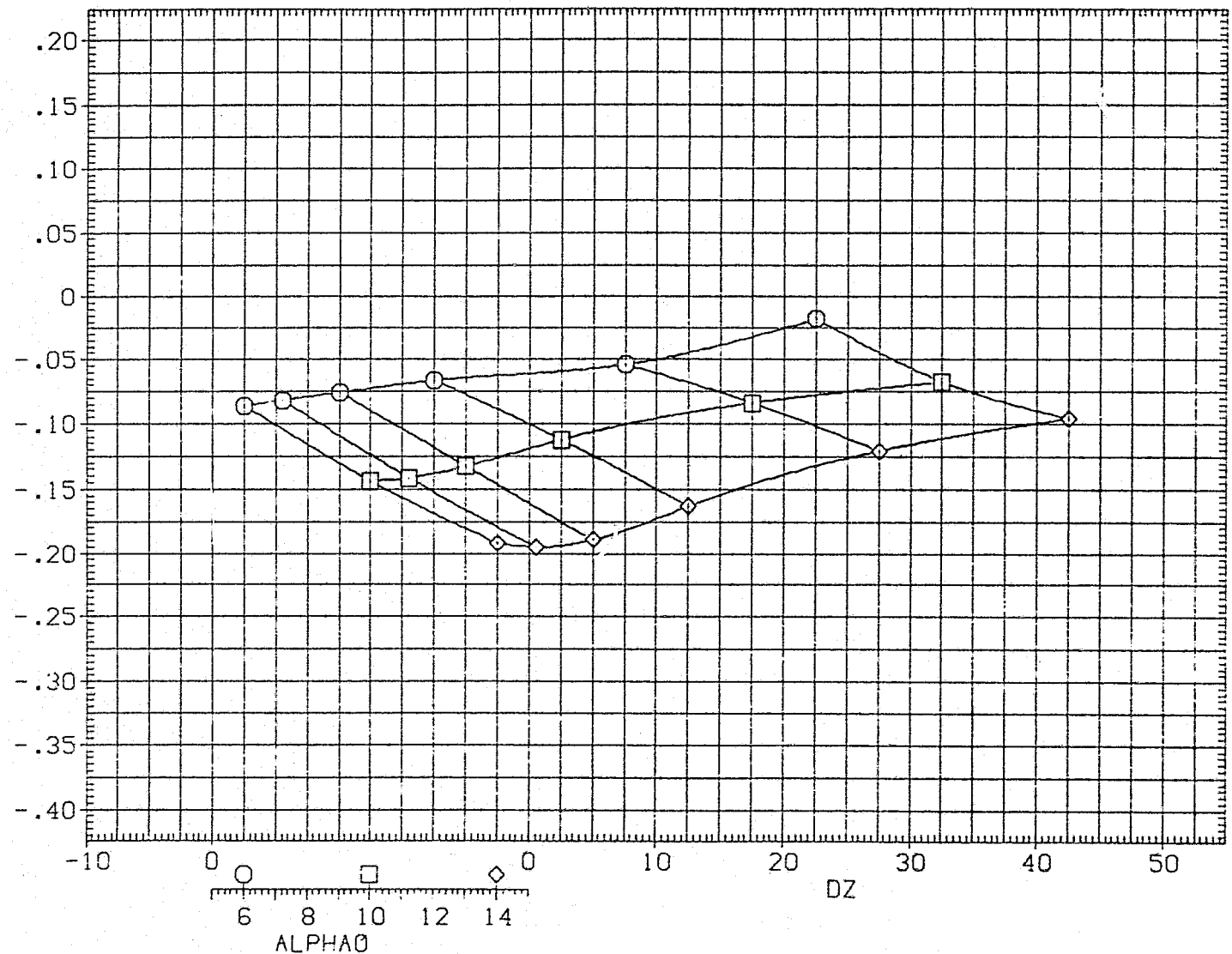


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (051 - 035) (6GN051)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

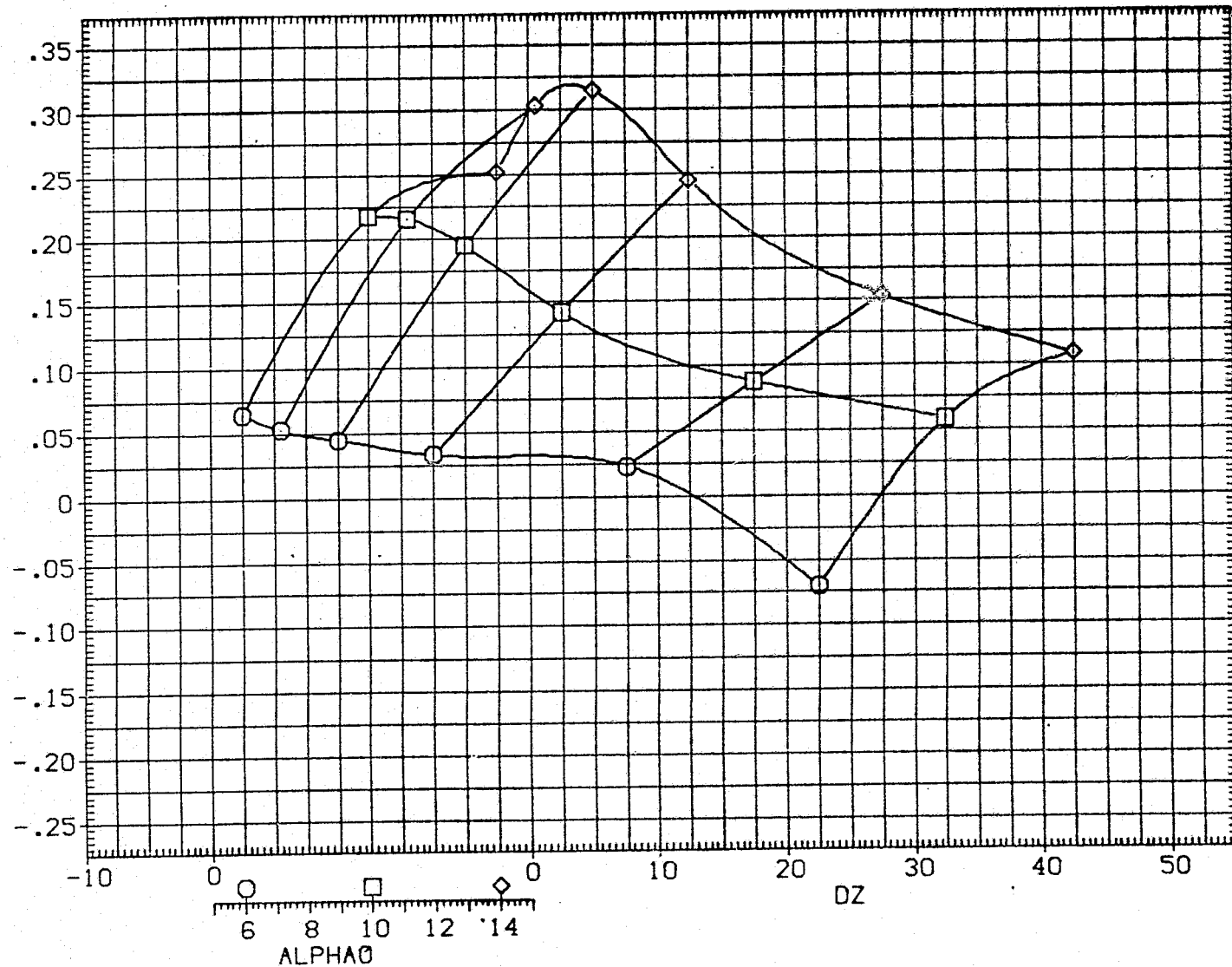


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

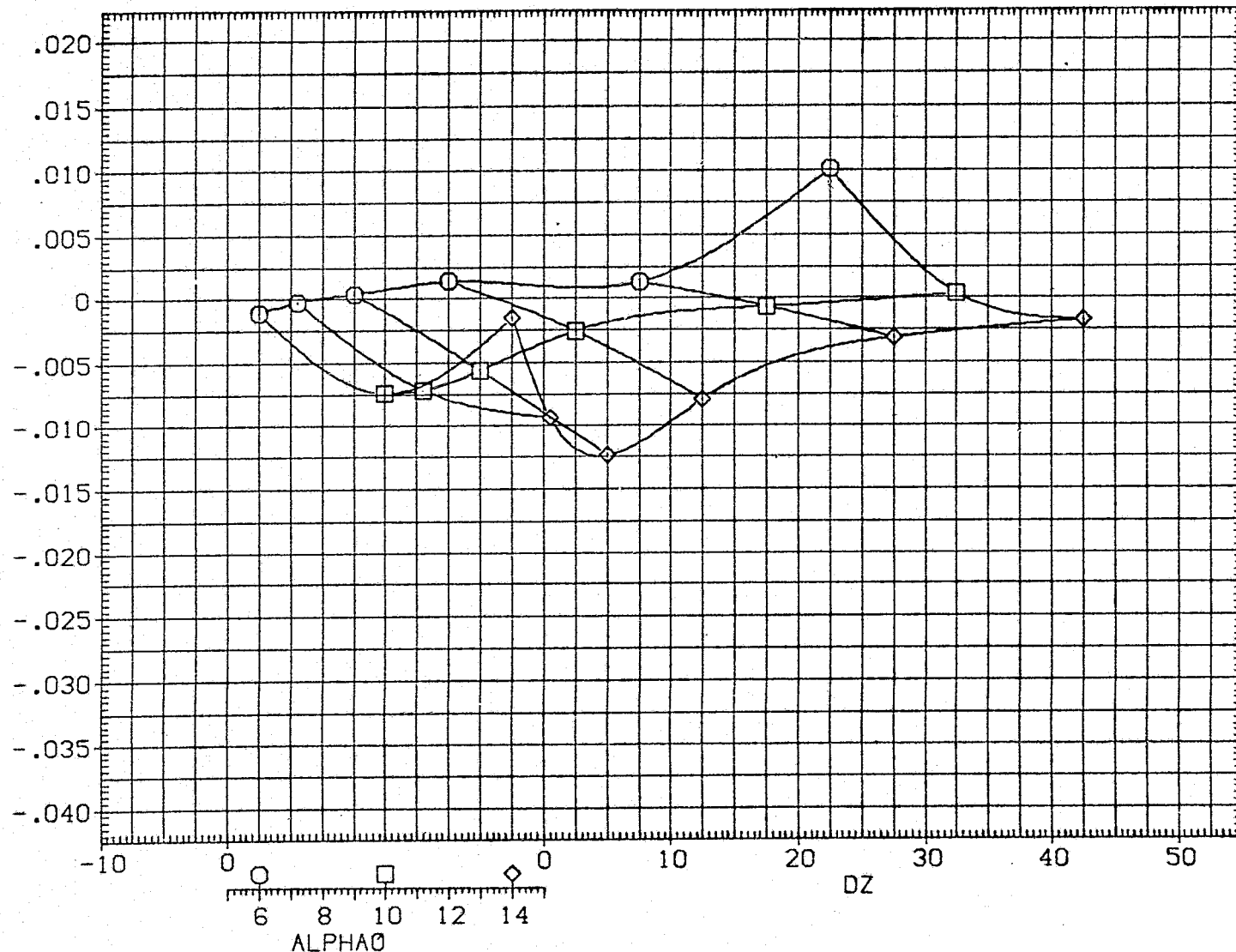


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (051 - 035) (6GN051)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

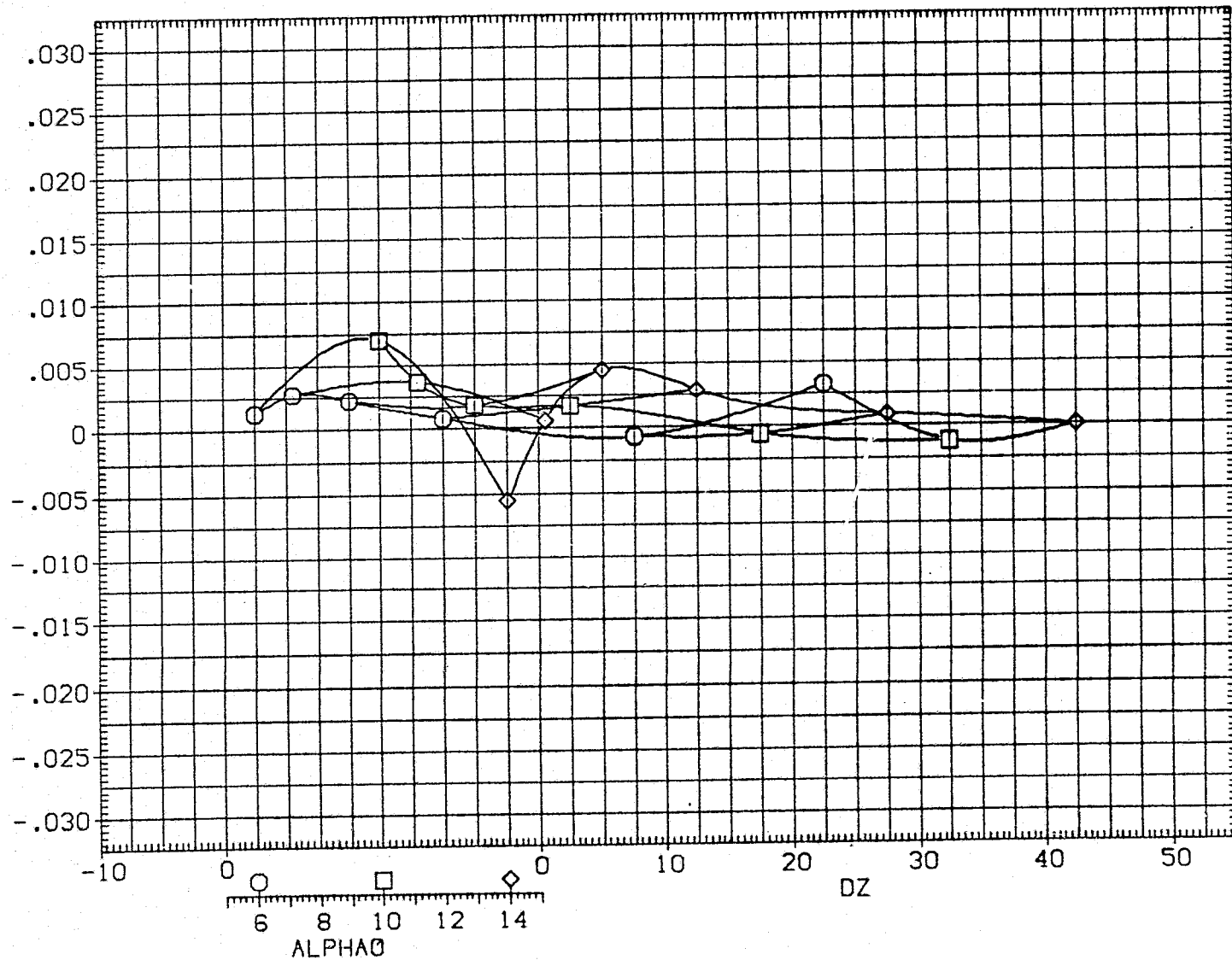


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRF	1339.9000	IN.XC
YMRF	.0000	IN.YC
ZMRF	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN. (STABILITY AXIS)

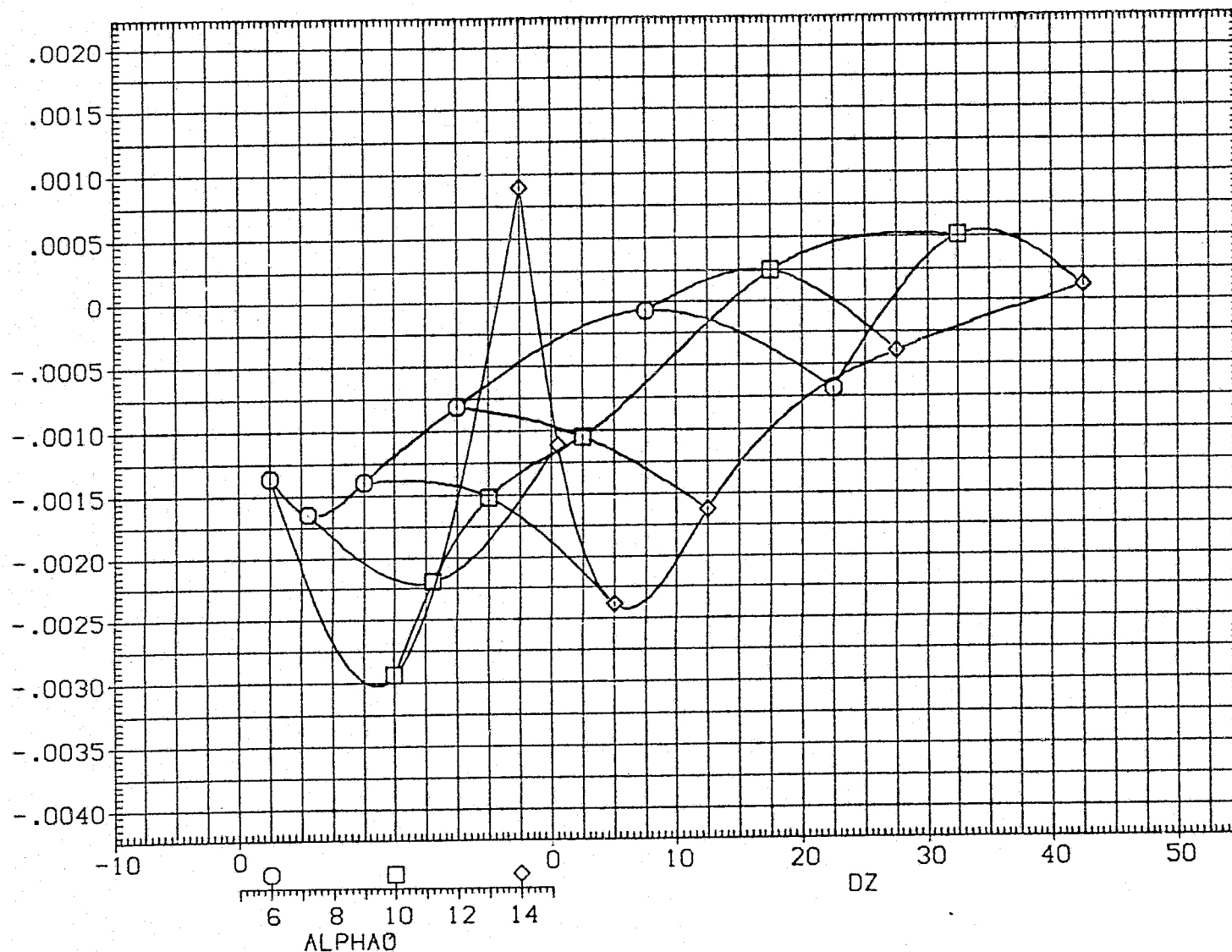


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1) D/S (051 - 035)(6GN051)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

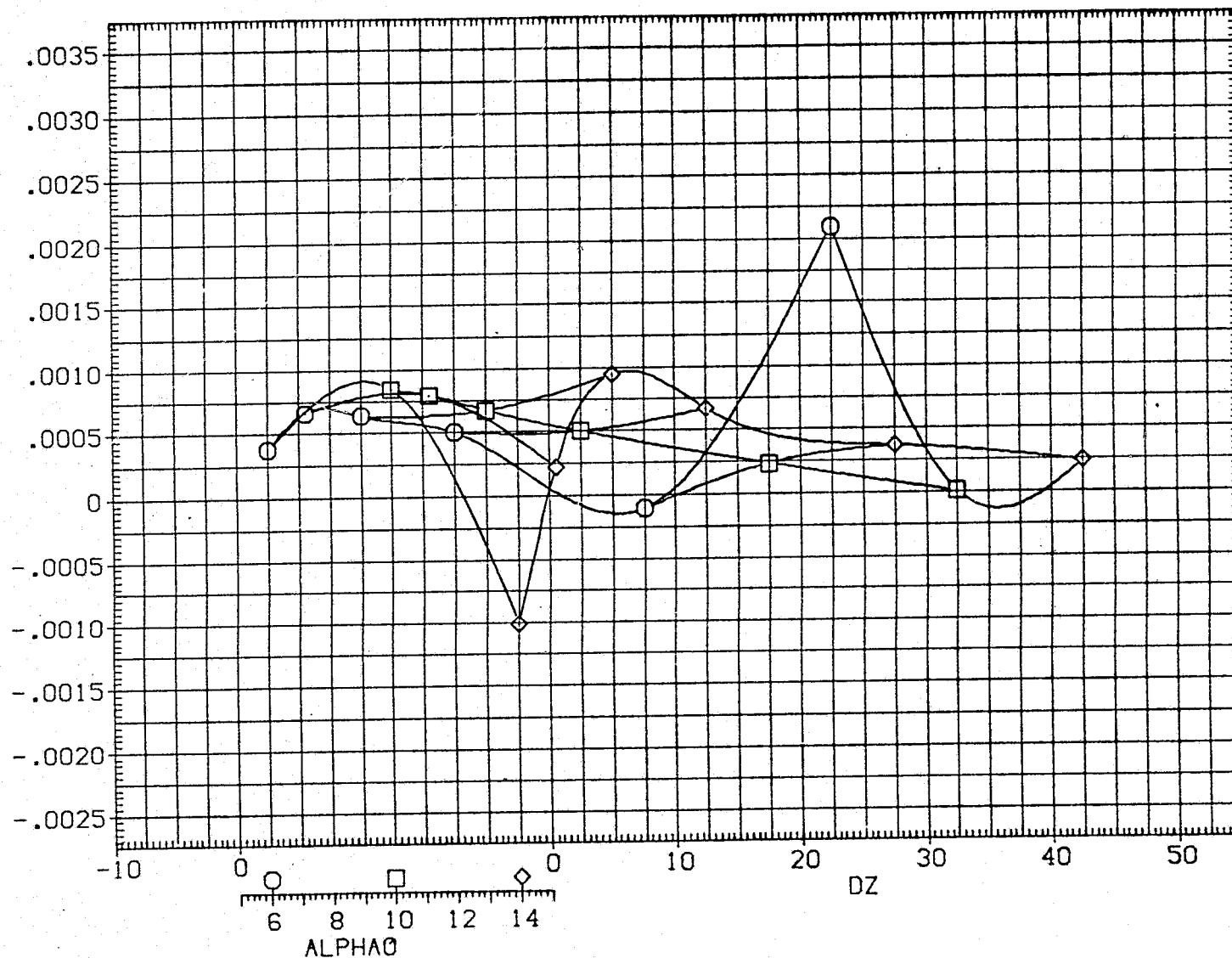


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (051 - 035) (6GN051)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

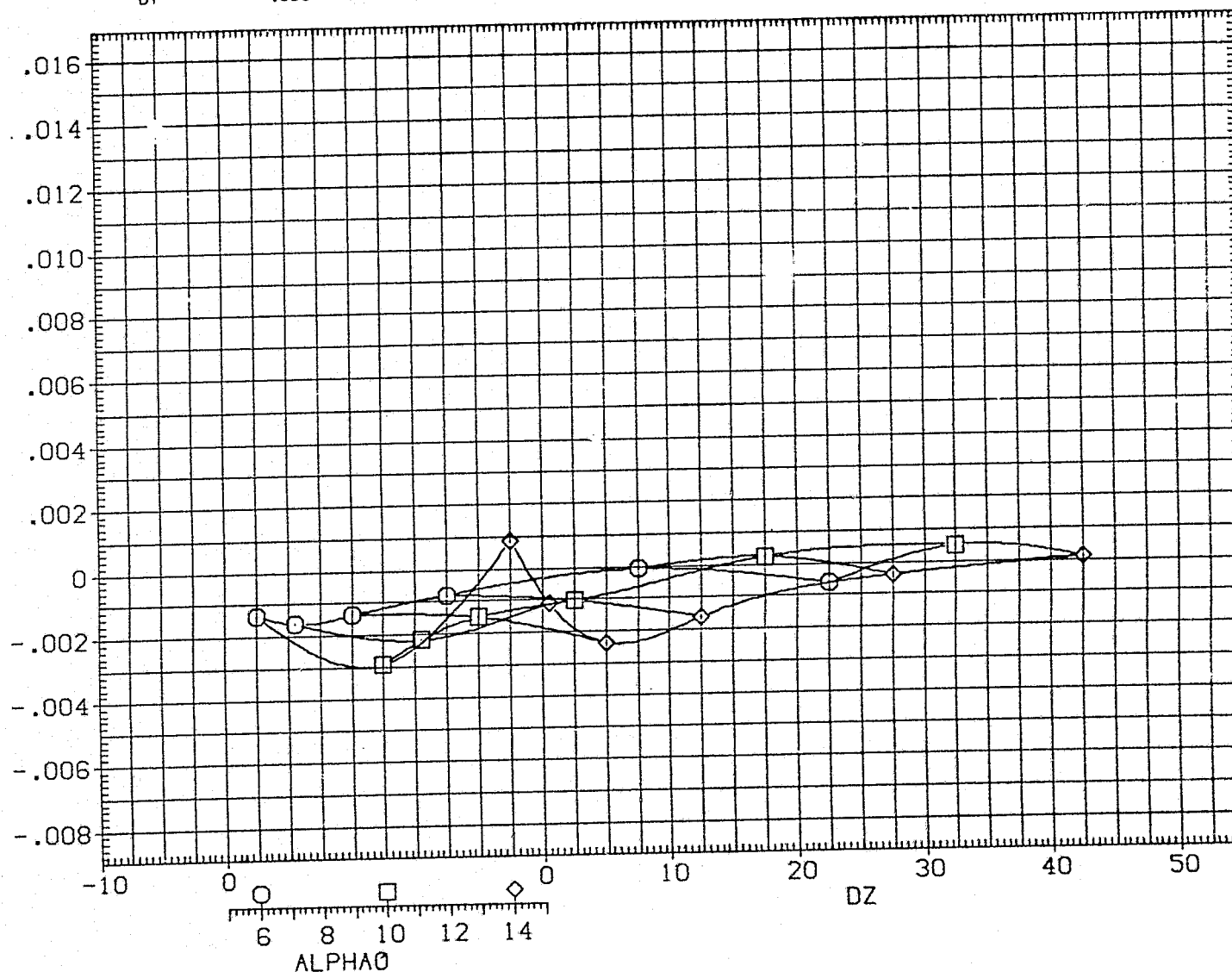


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1) D/S (051 - 035) (6GN051)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

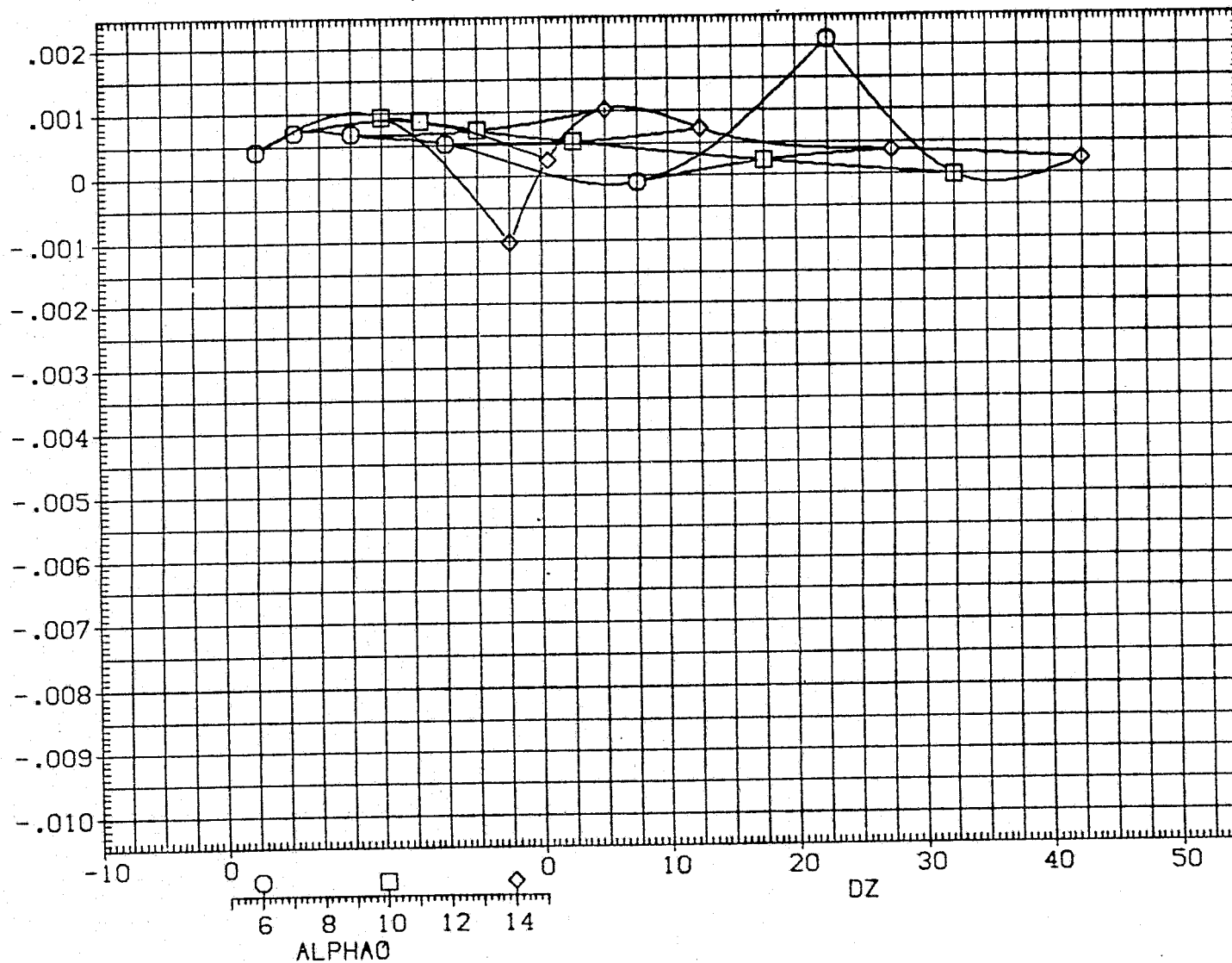


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (054 - 035)(6GN054)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

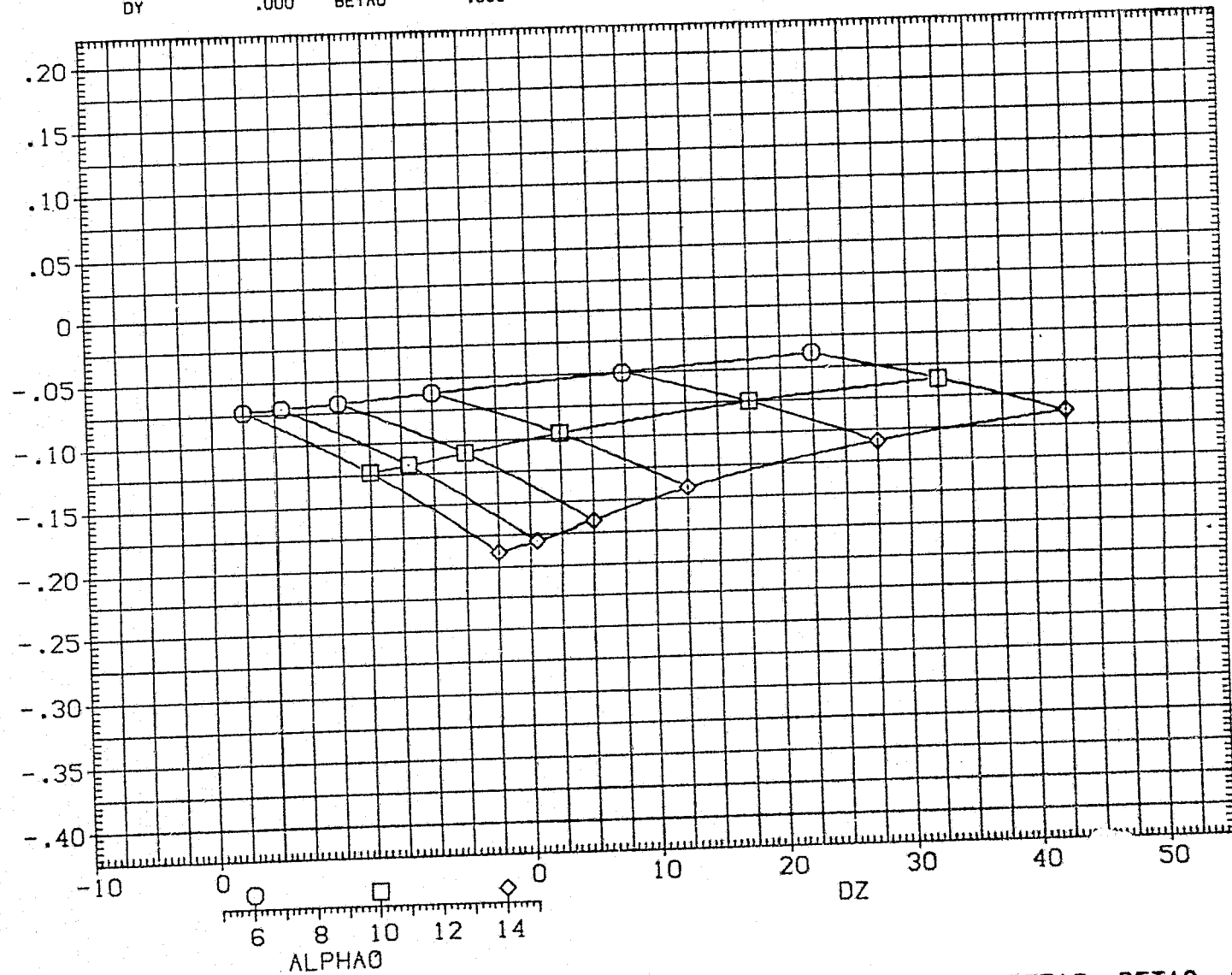


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (054 - 035)(6GN054)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

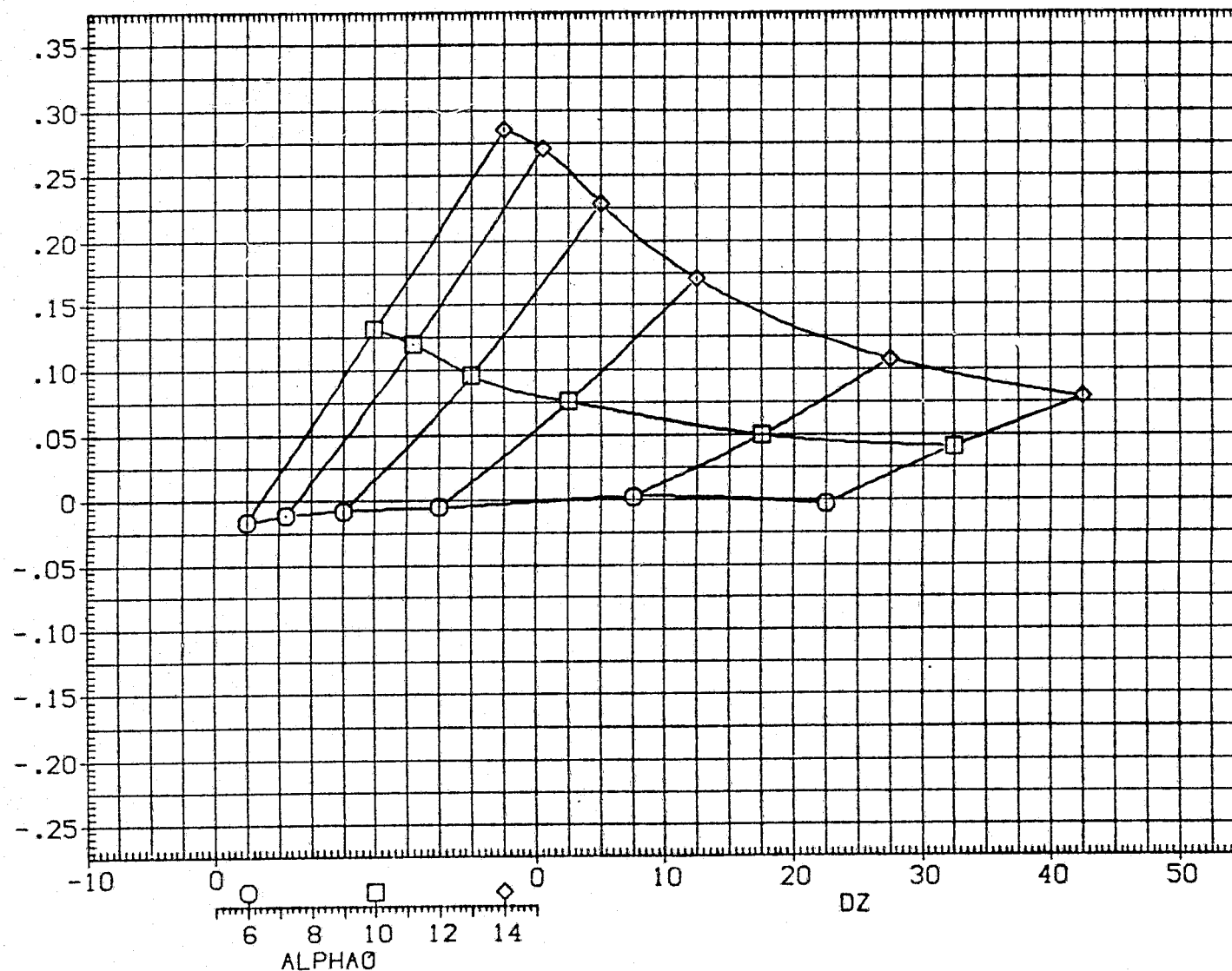


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (054 - 035) (6GN054)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

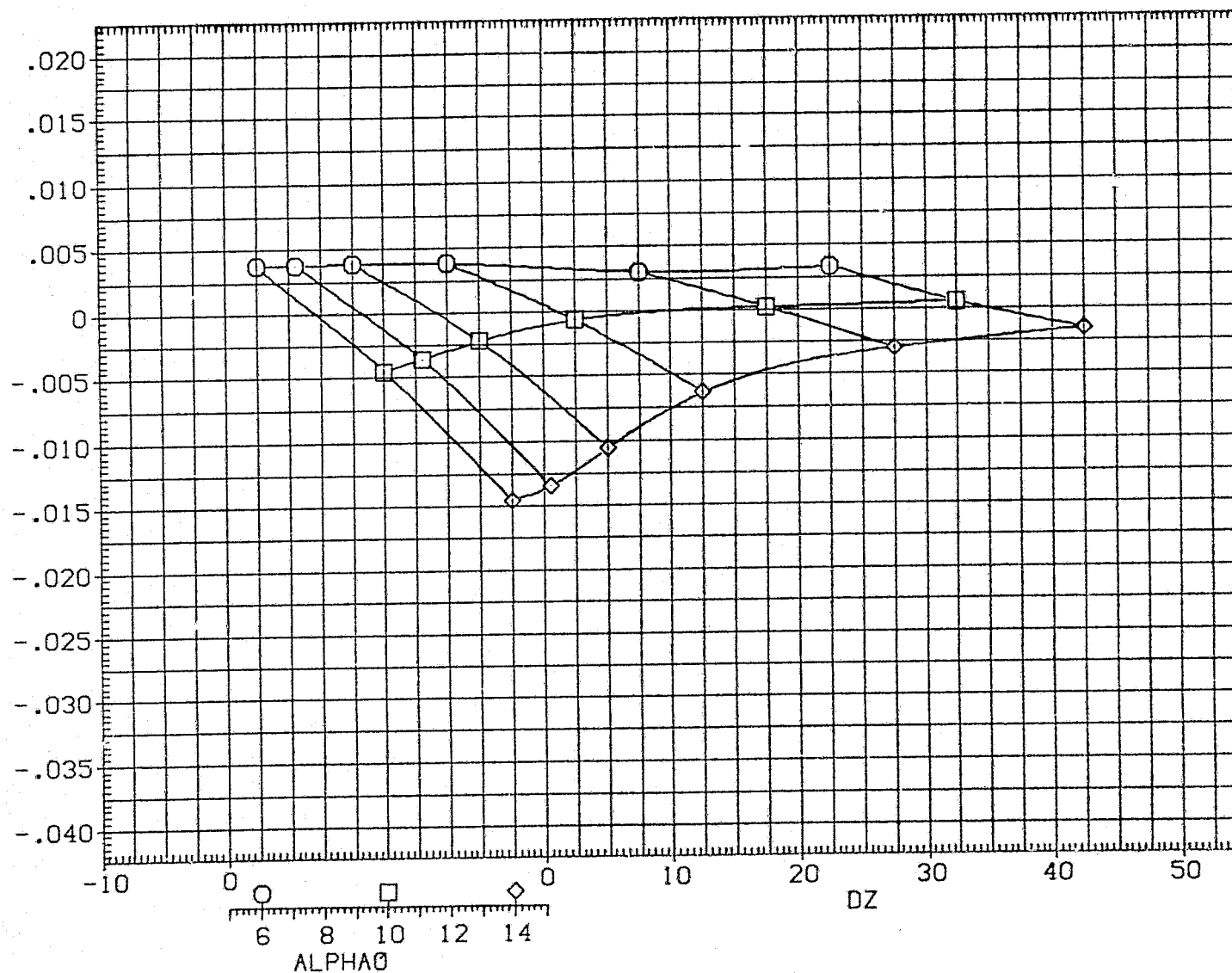


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (054 - 035) (6GN054)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.6000	IN.ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

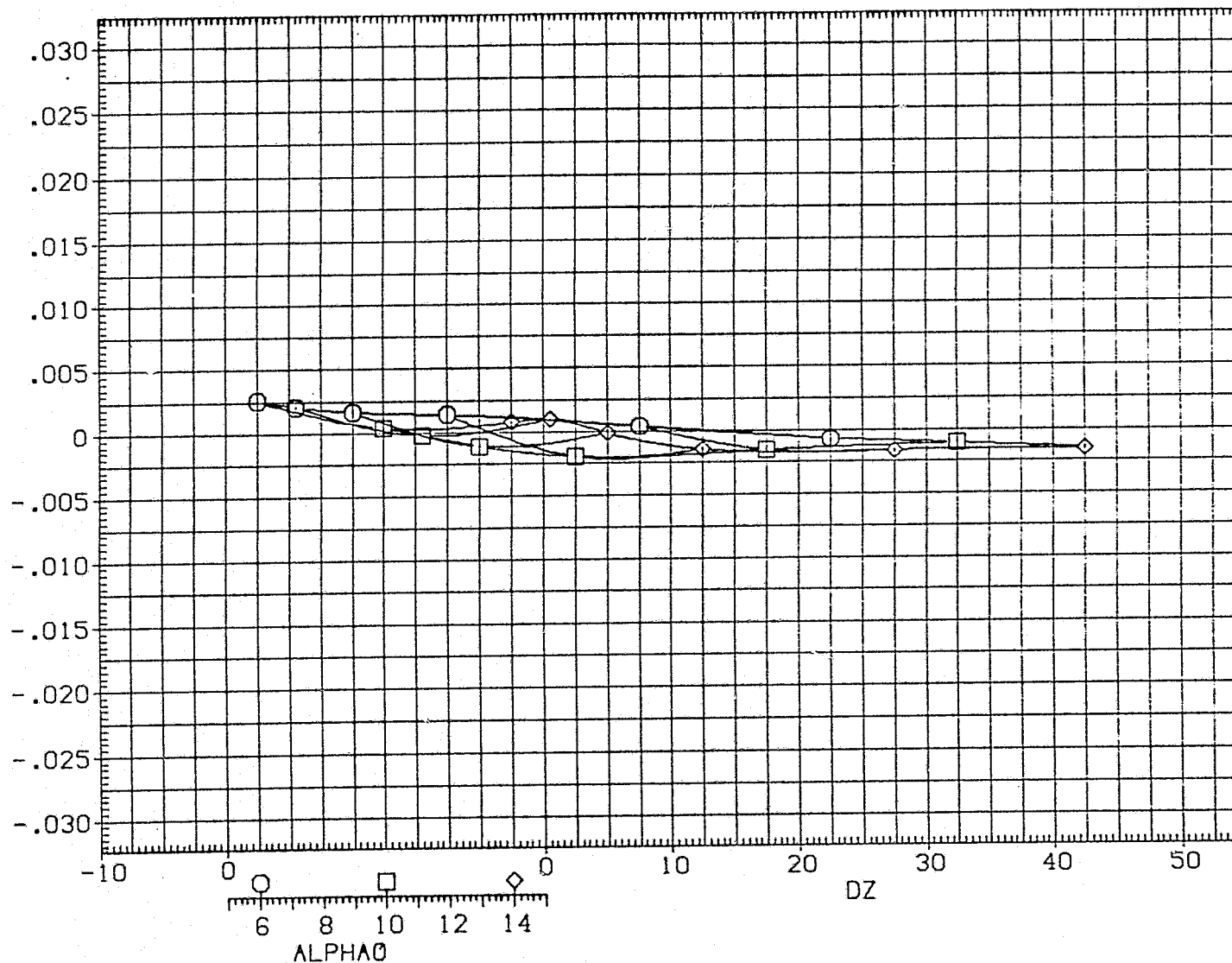


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (747/1)

D/S (054 - 035) (6GN054)

PARAMETRIC VALUES			
ALPHA0	4.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.8000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN. (STABILITY AXIS)

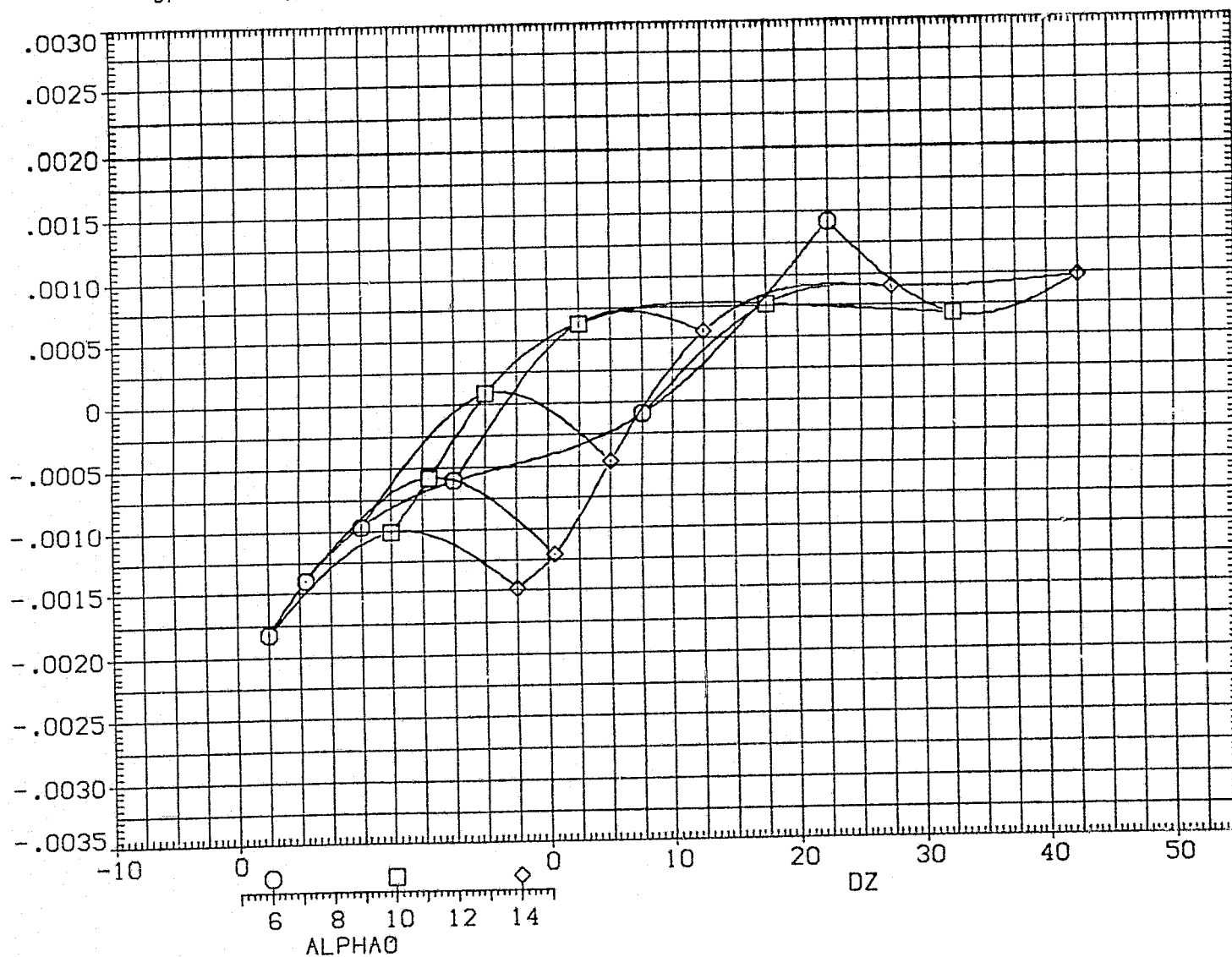


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (054 - 035) (6GN054)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

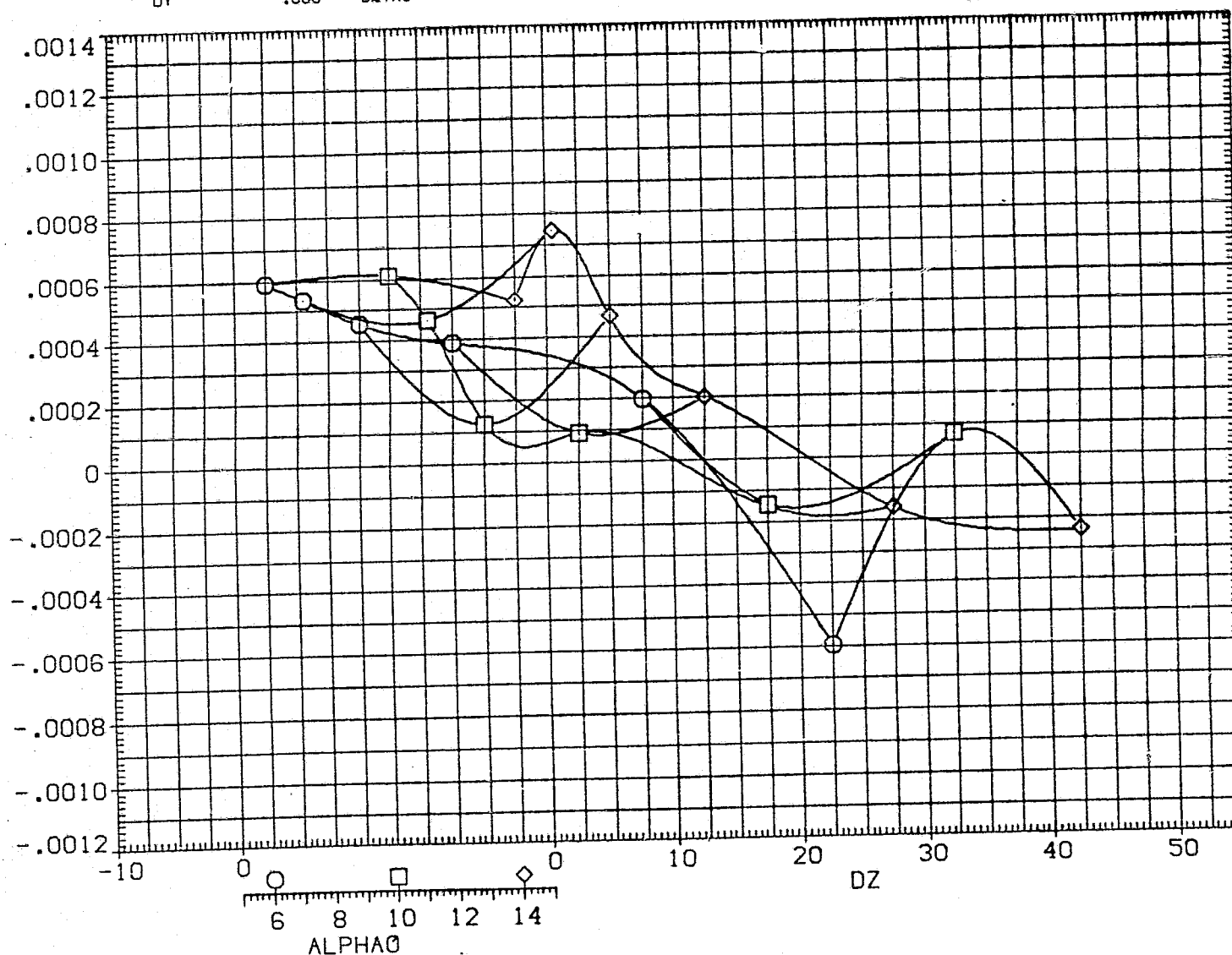


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

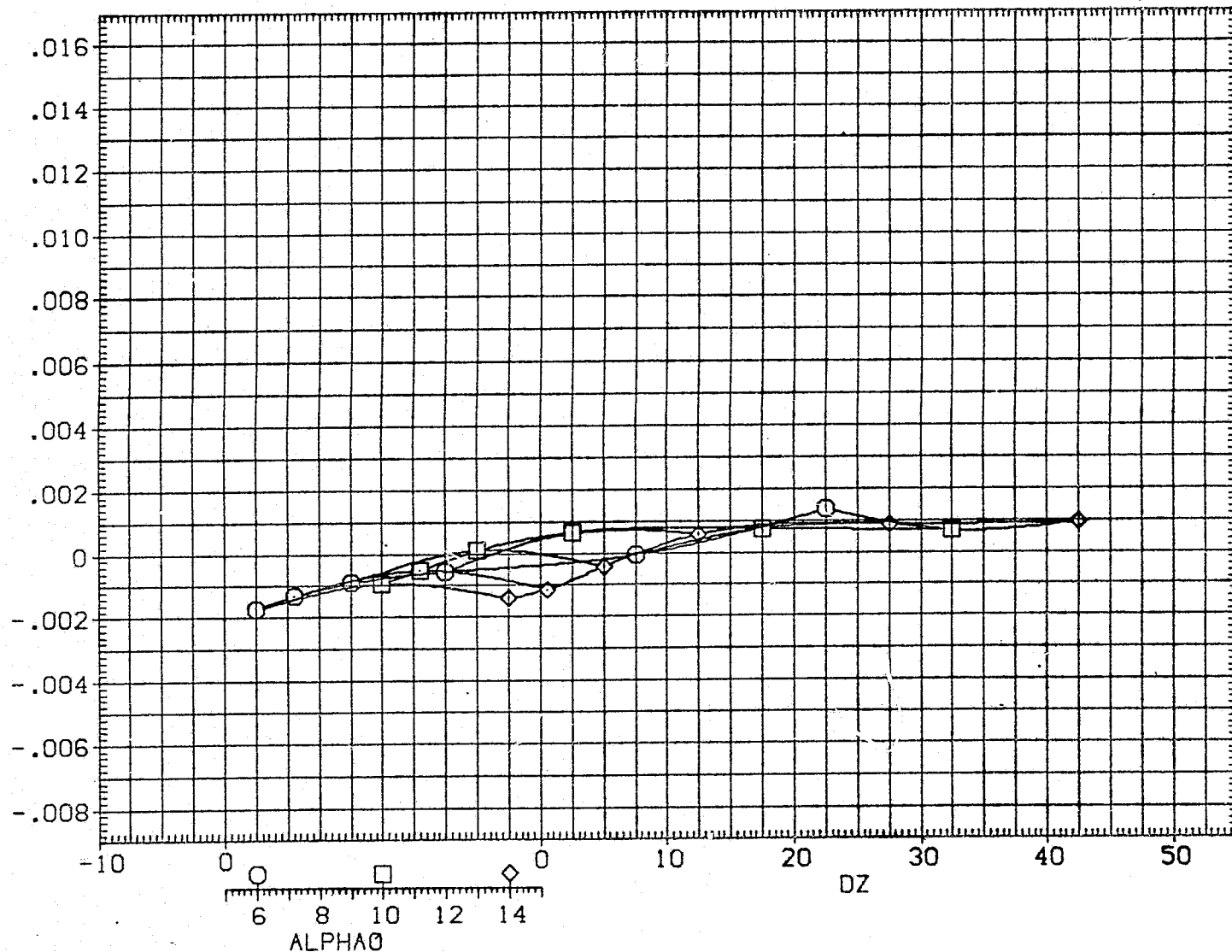


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (054 - 035)(6GN054)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETAO	.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

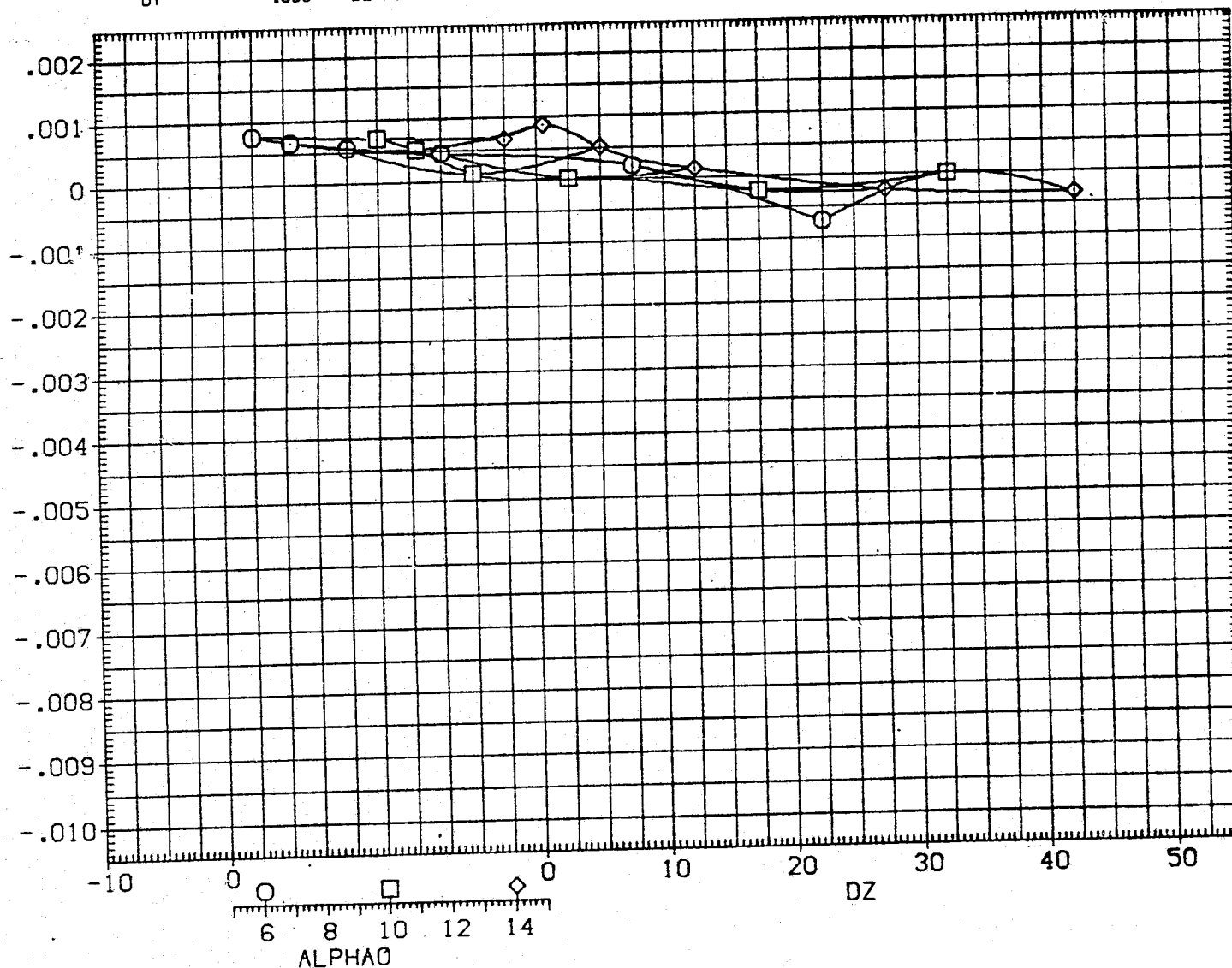


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETAO, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (057 - 035)(6GN057)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

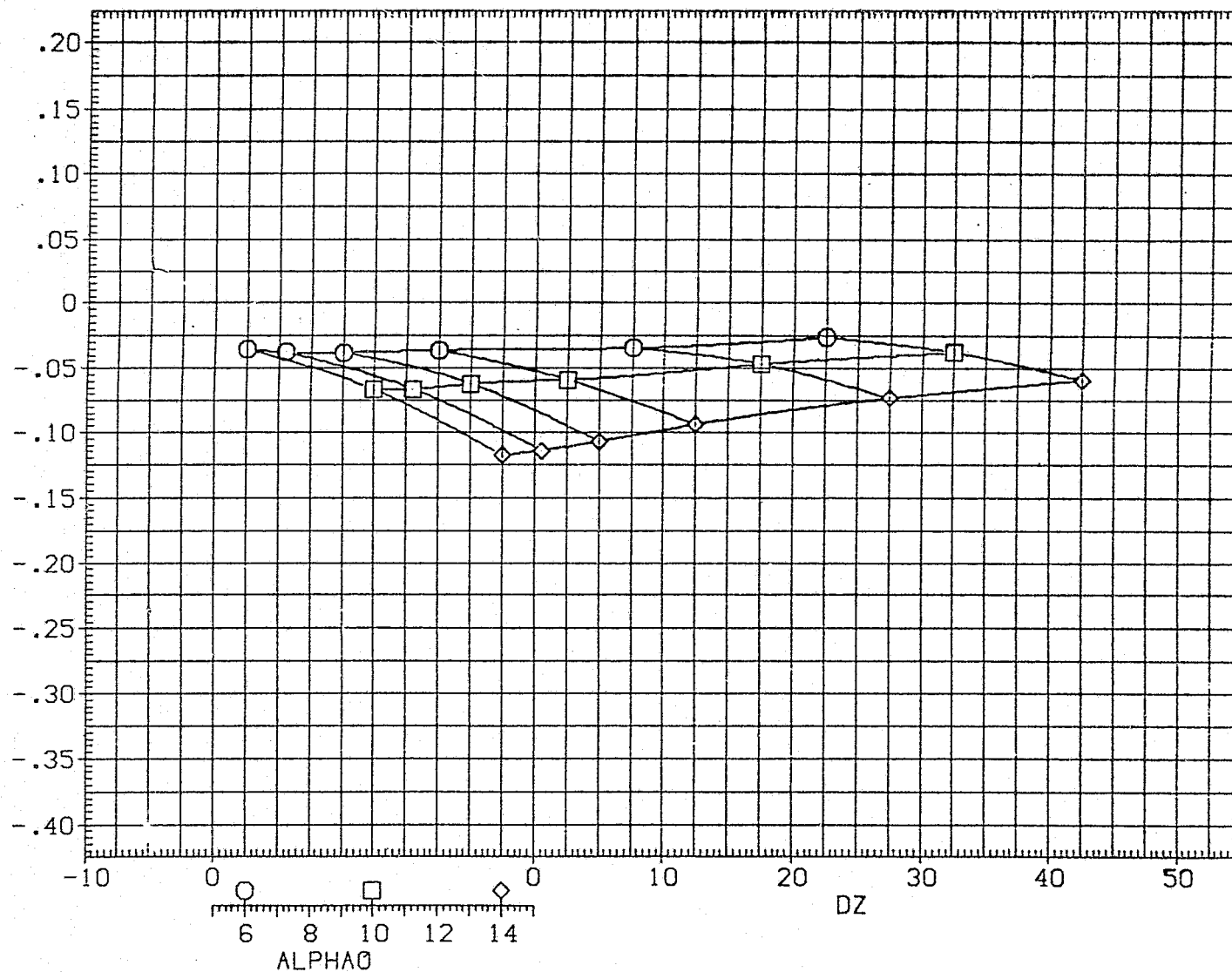


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (057 - 035)(6GN057)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SO.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

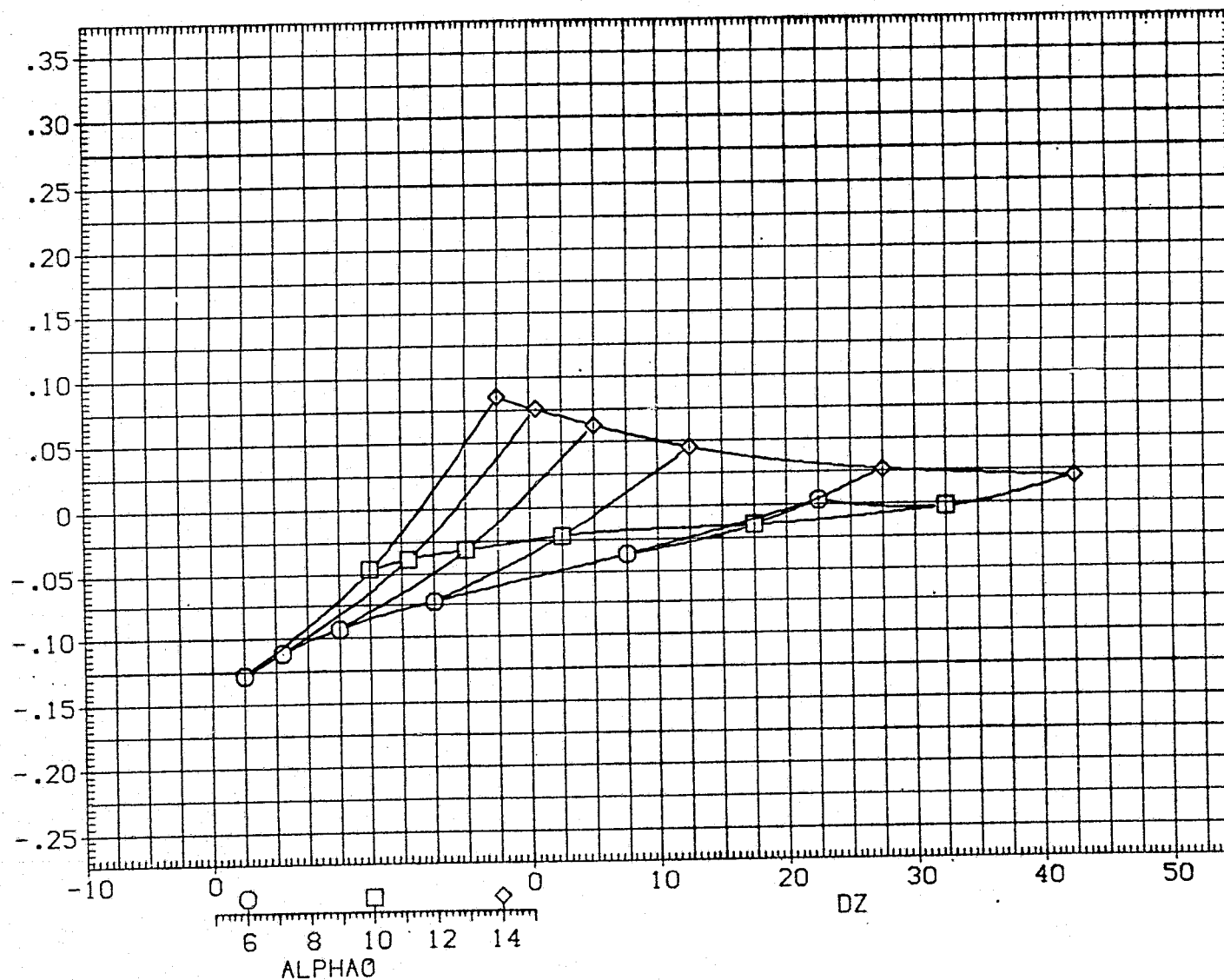


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-DB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	OX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

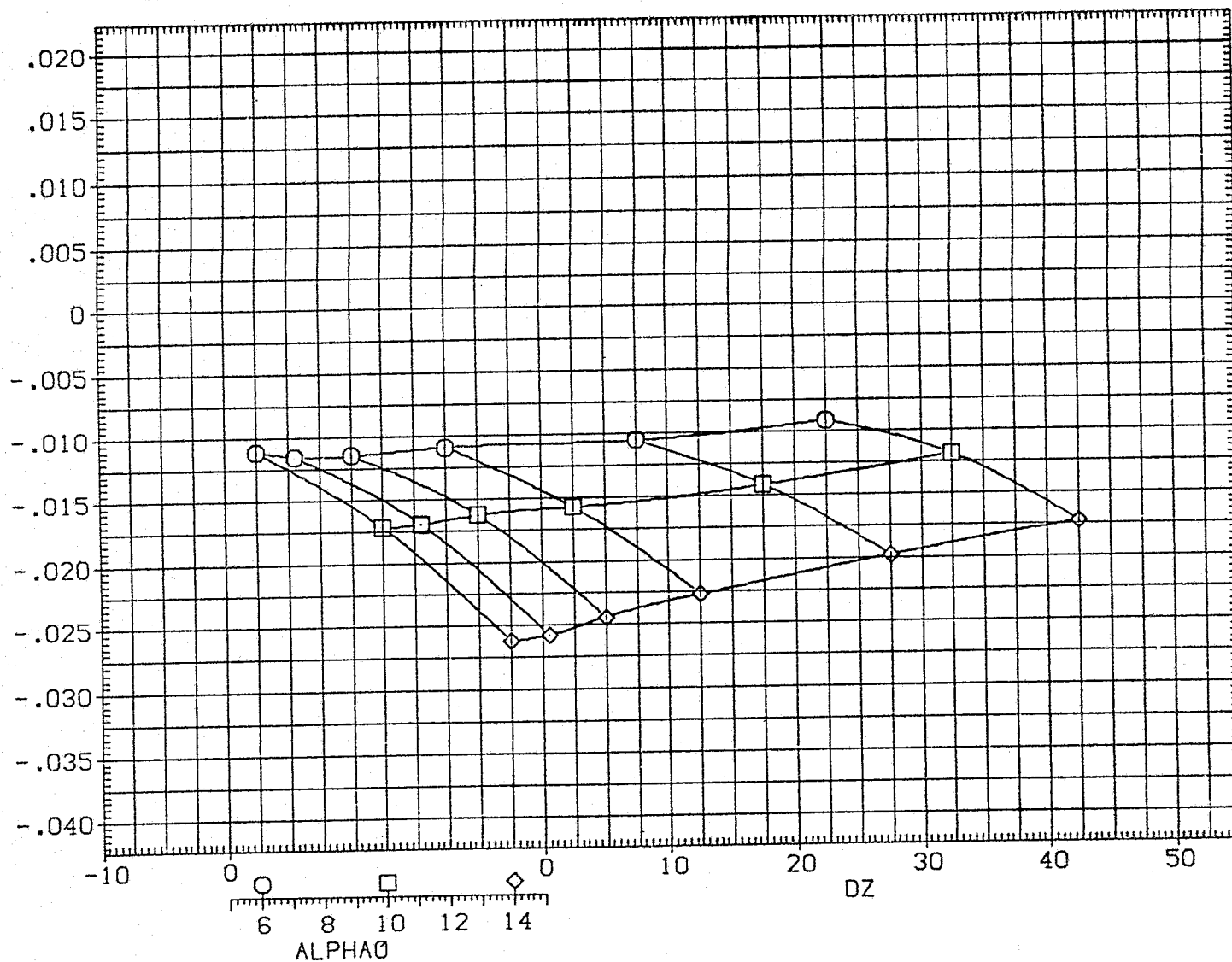


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1) D/S (057 - 035)(6GN057)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

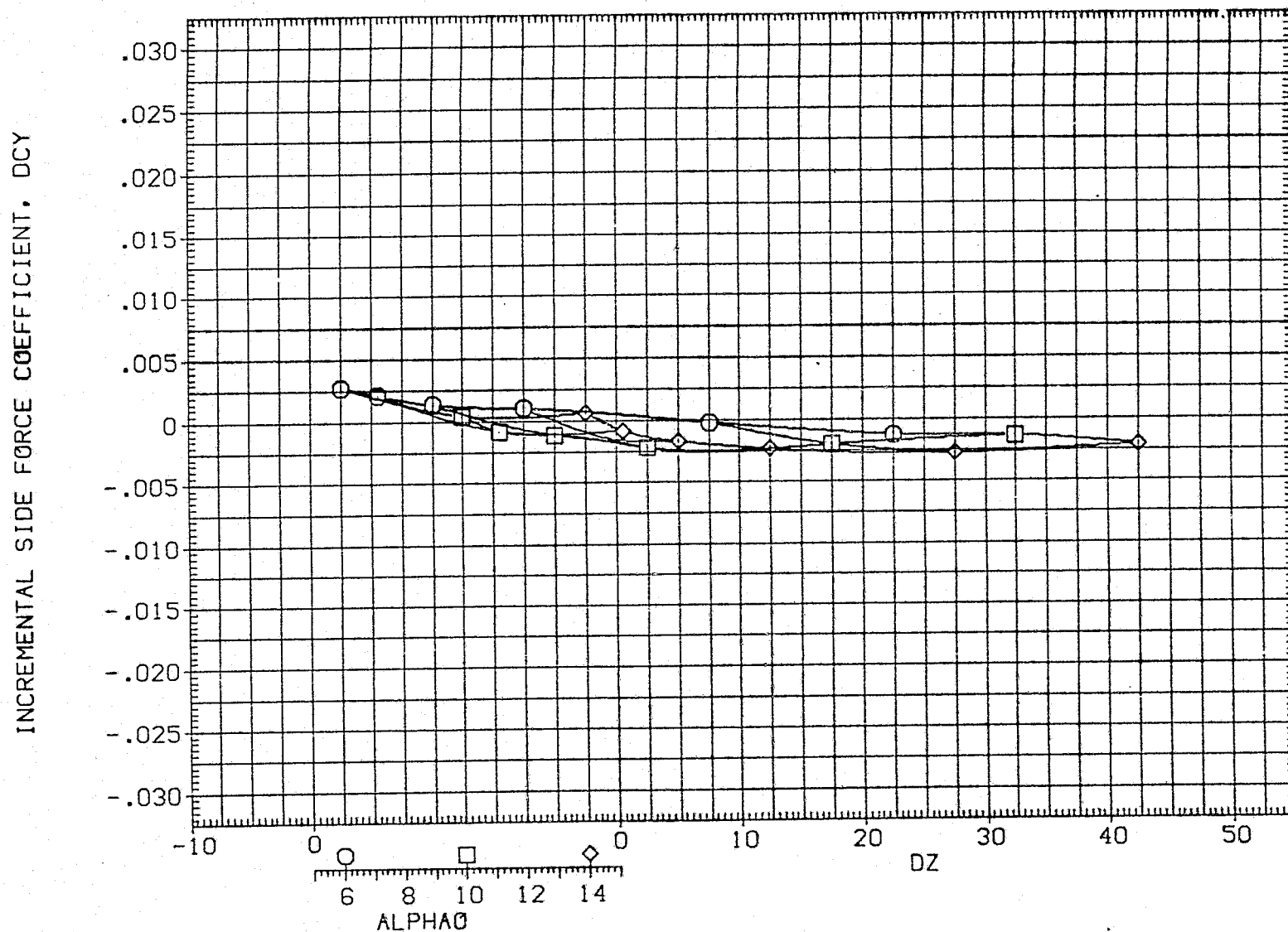


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1) D/S (057 - 035)(6GN057)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCLN. (STABILITY AXIS)

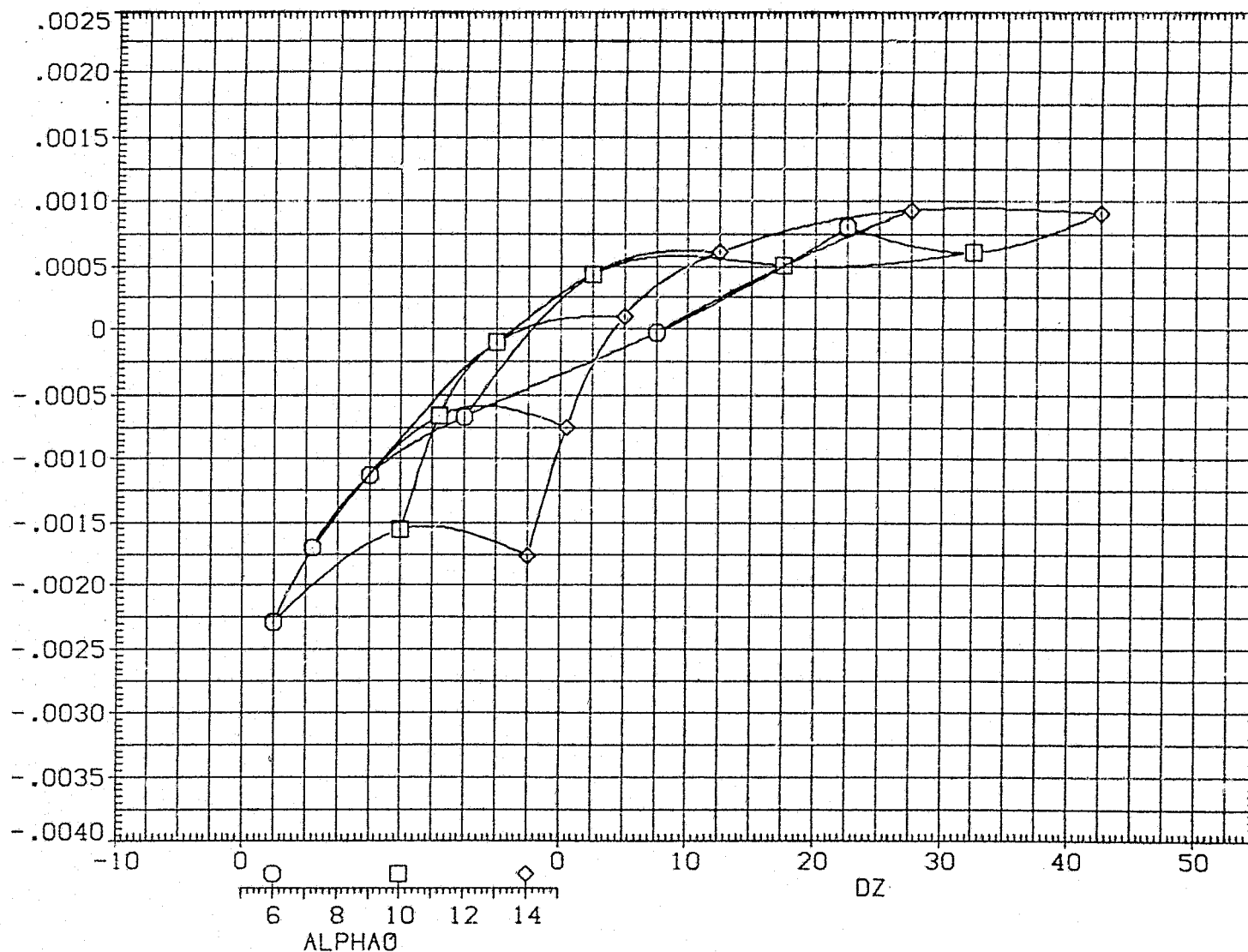


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1)

D/S (057 - 035) (6GN057)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	SG.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCSL, (STABILITY AXIS)

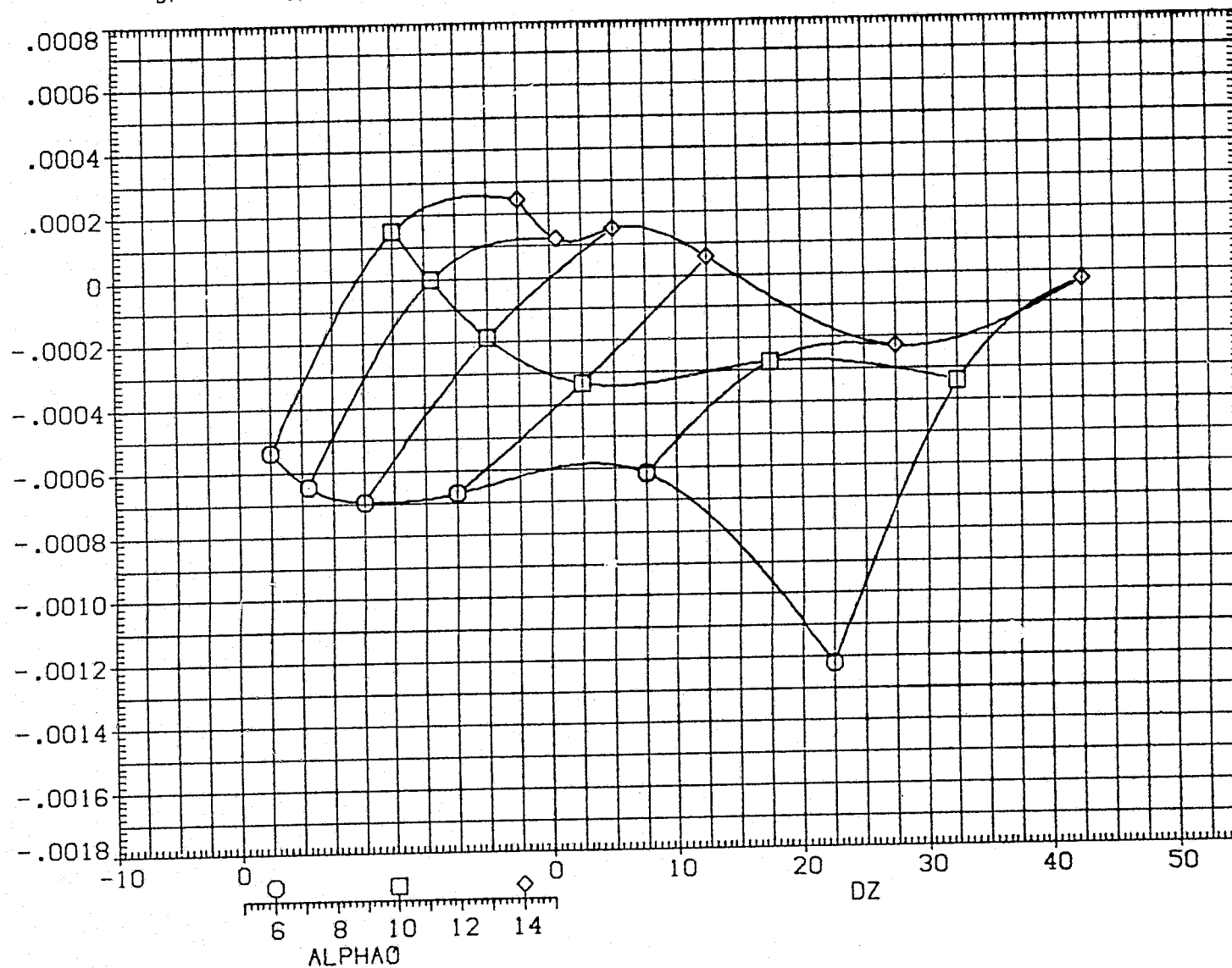


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

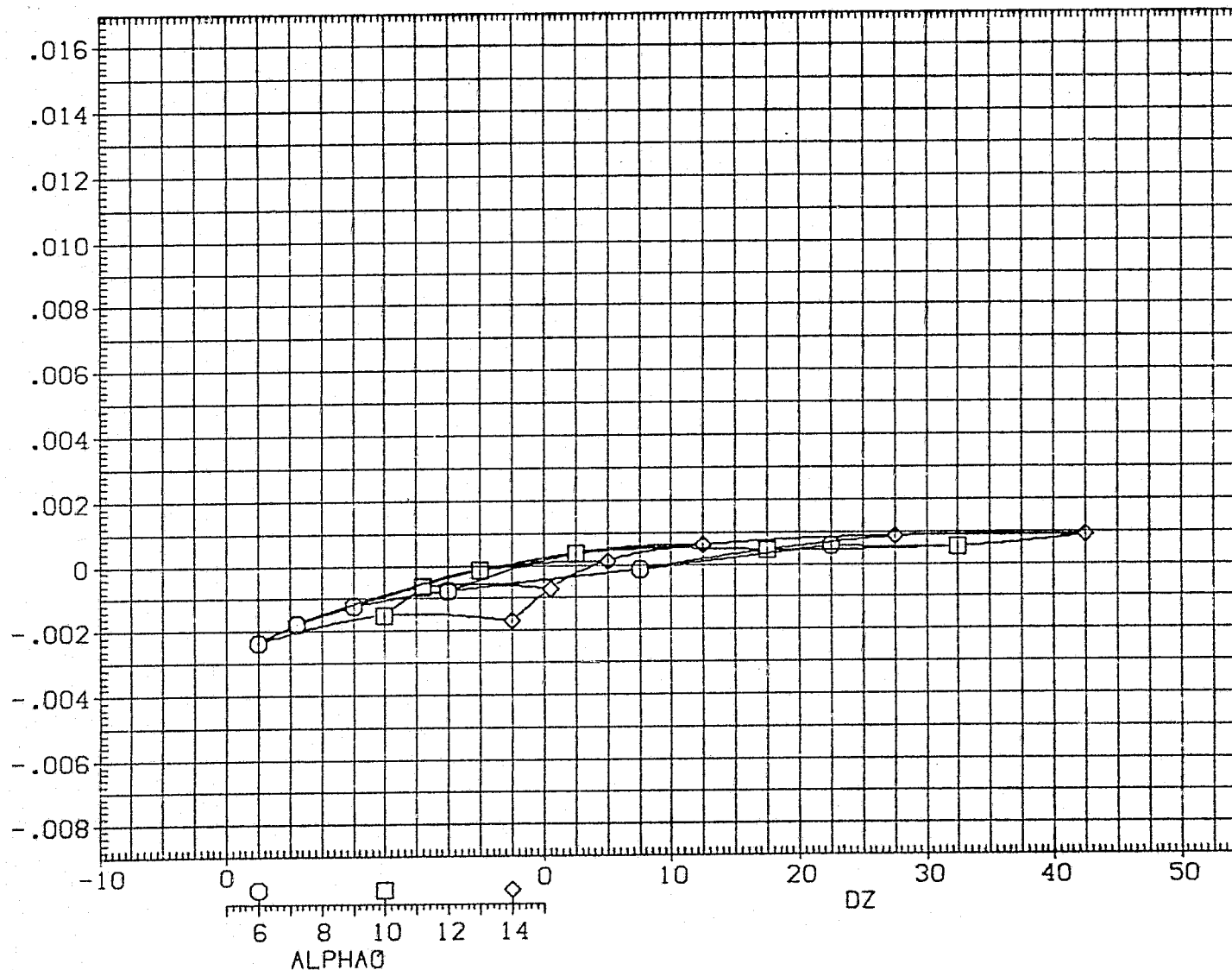


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (747/1) D/S (057 - 035) (6GN057)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.7800	IN.
BREF	2348.0400	IN.
XMRP	1339.9000	IN.XC
YMRP	.0000	IN.YC
ZMRP	190.8000	IN.ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

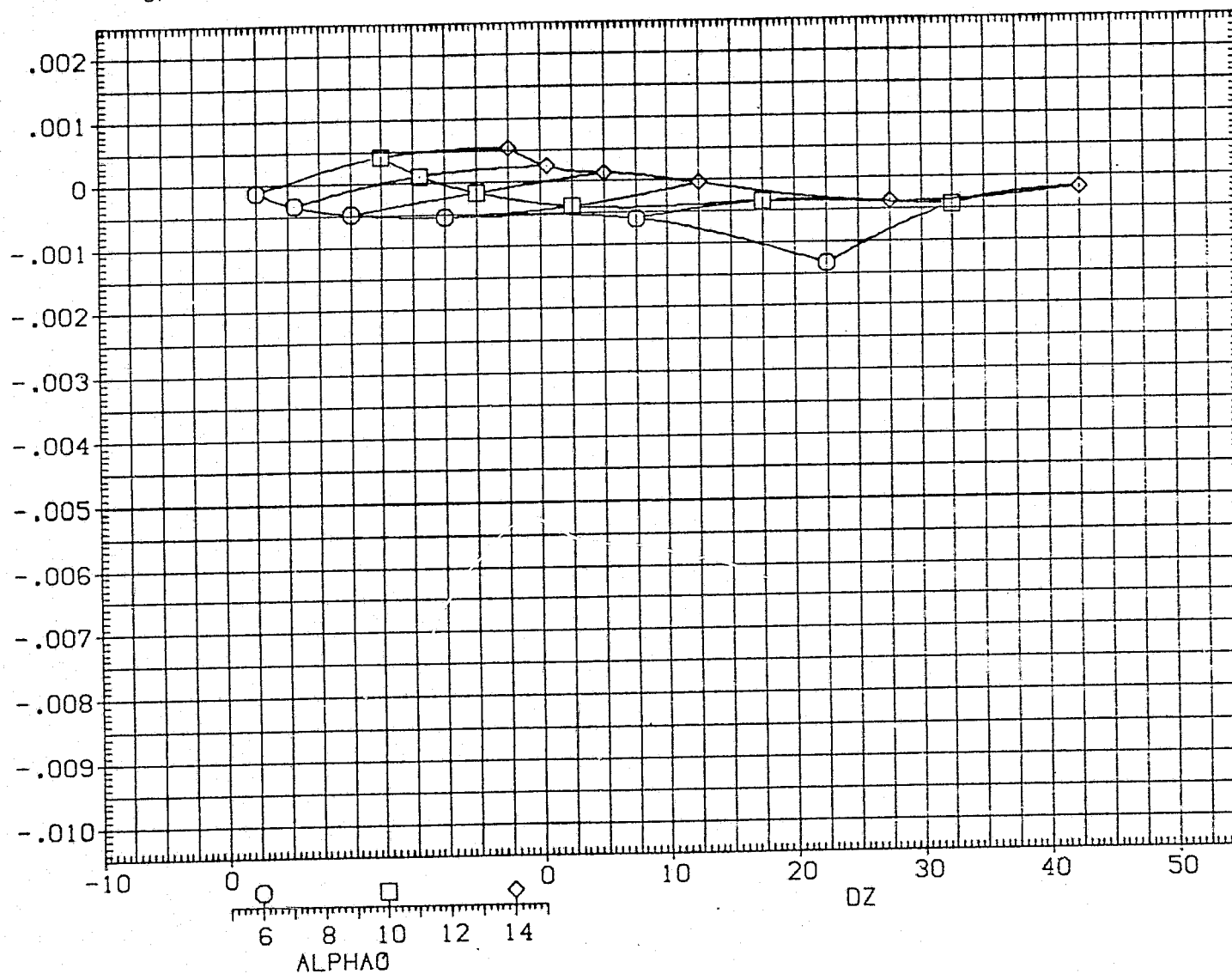


FIG 38 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON CARRIER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (049 - 010)(7GN049)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

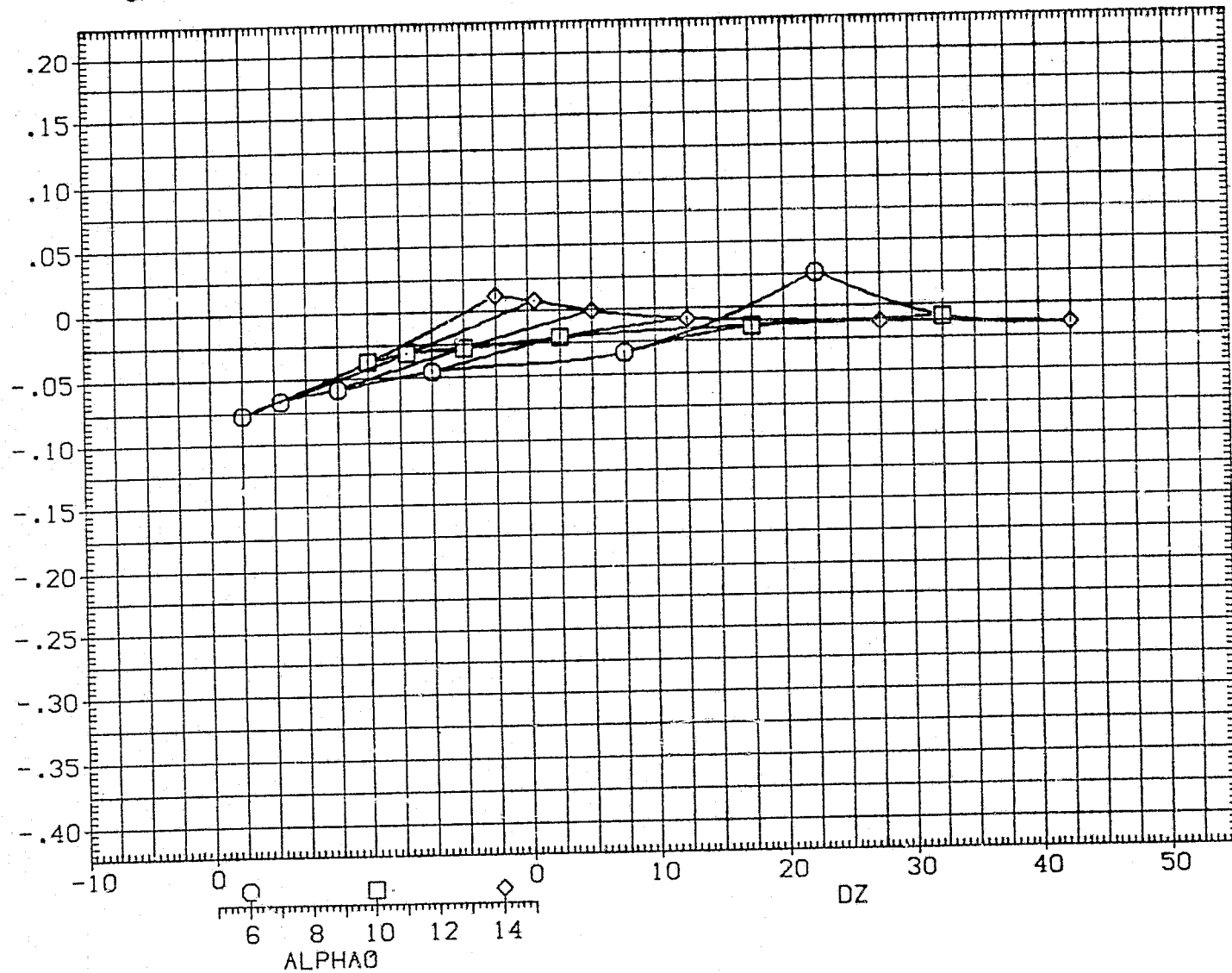


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (049 - 010) (7GN049)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-19	.000	ELV-09	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

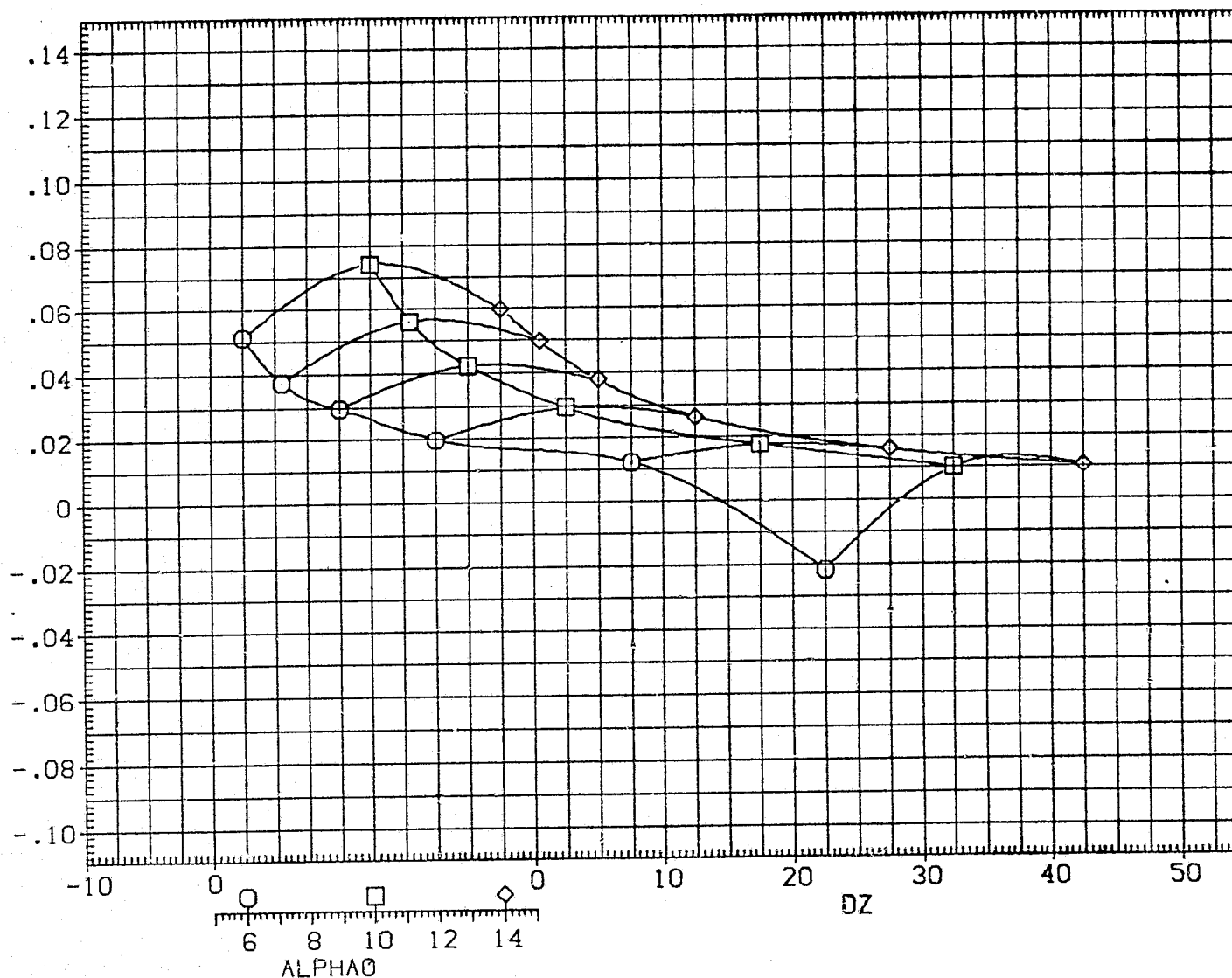


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (049 - 010)(76N049)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

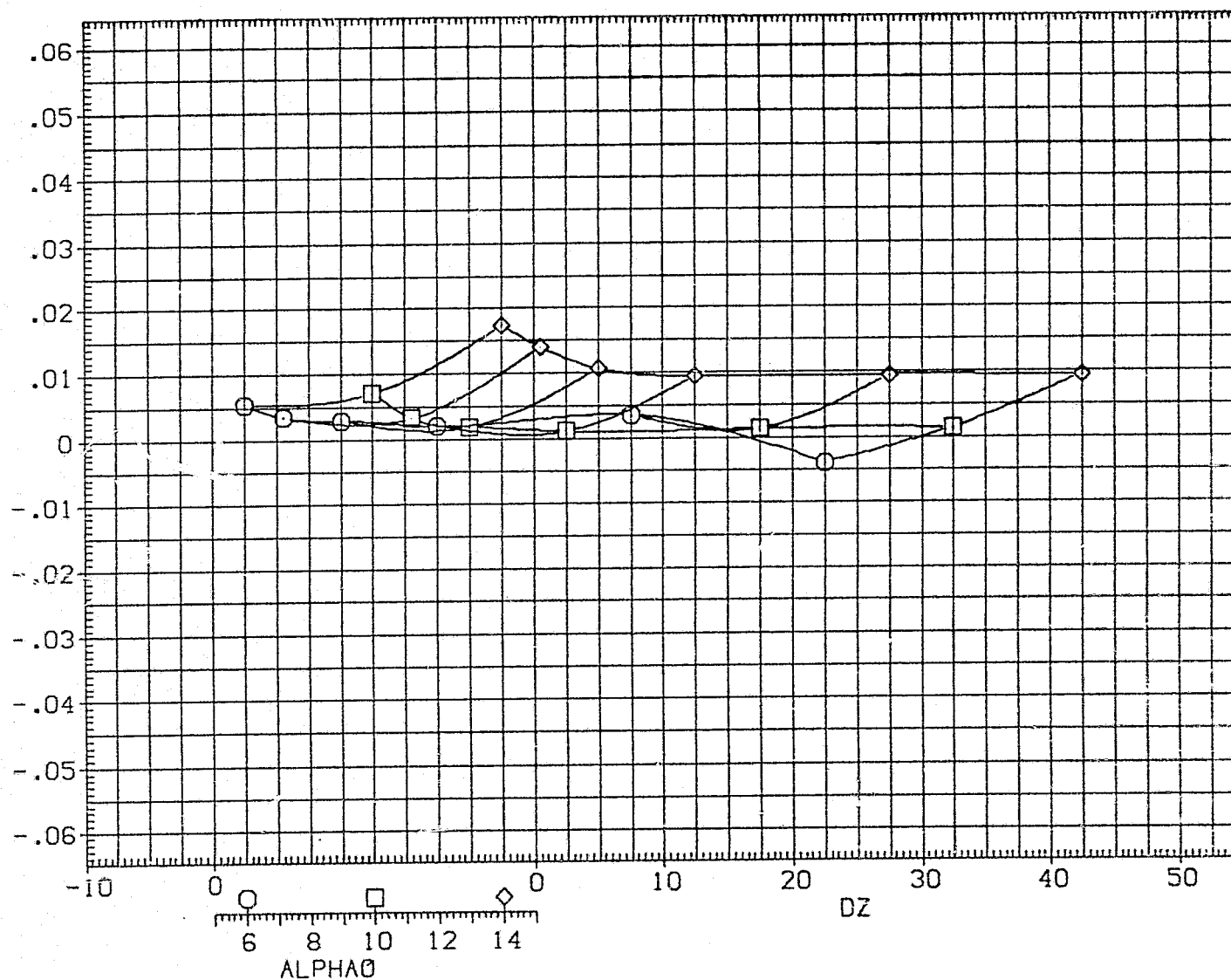


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (049 - 010)(76N049)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

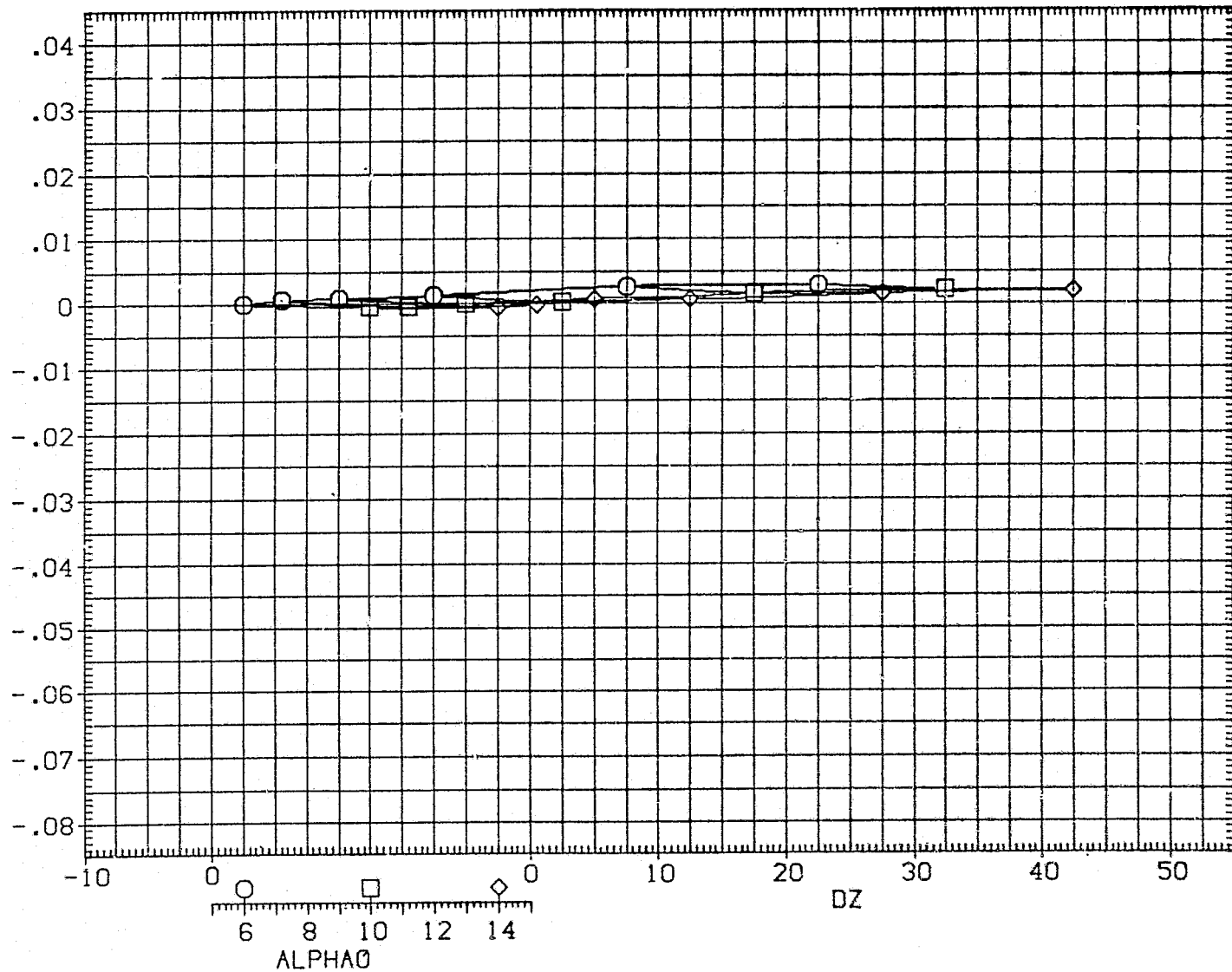


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

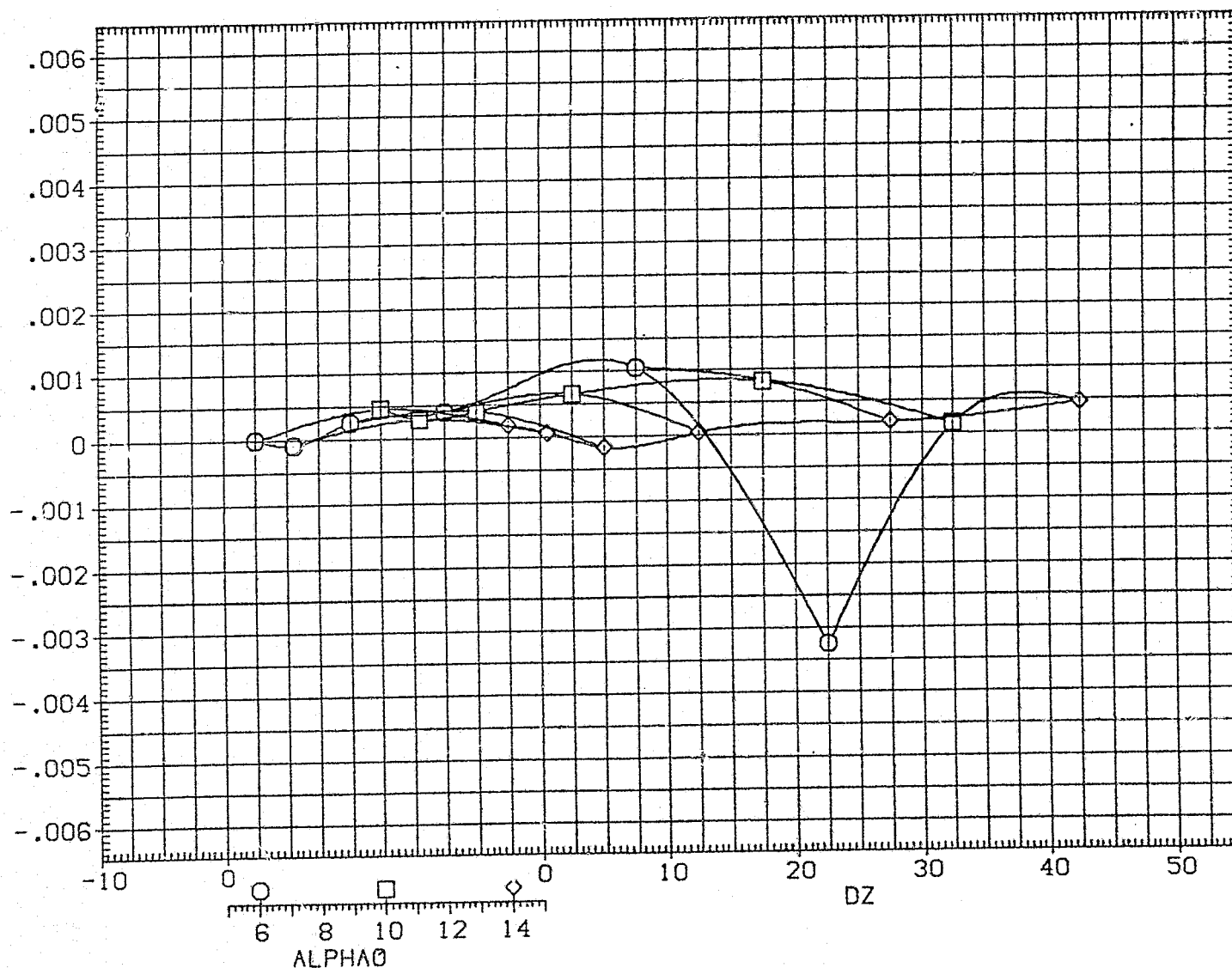


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (049 - 010)(7GN049)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

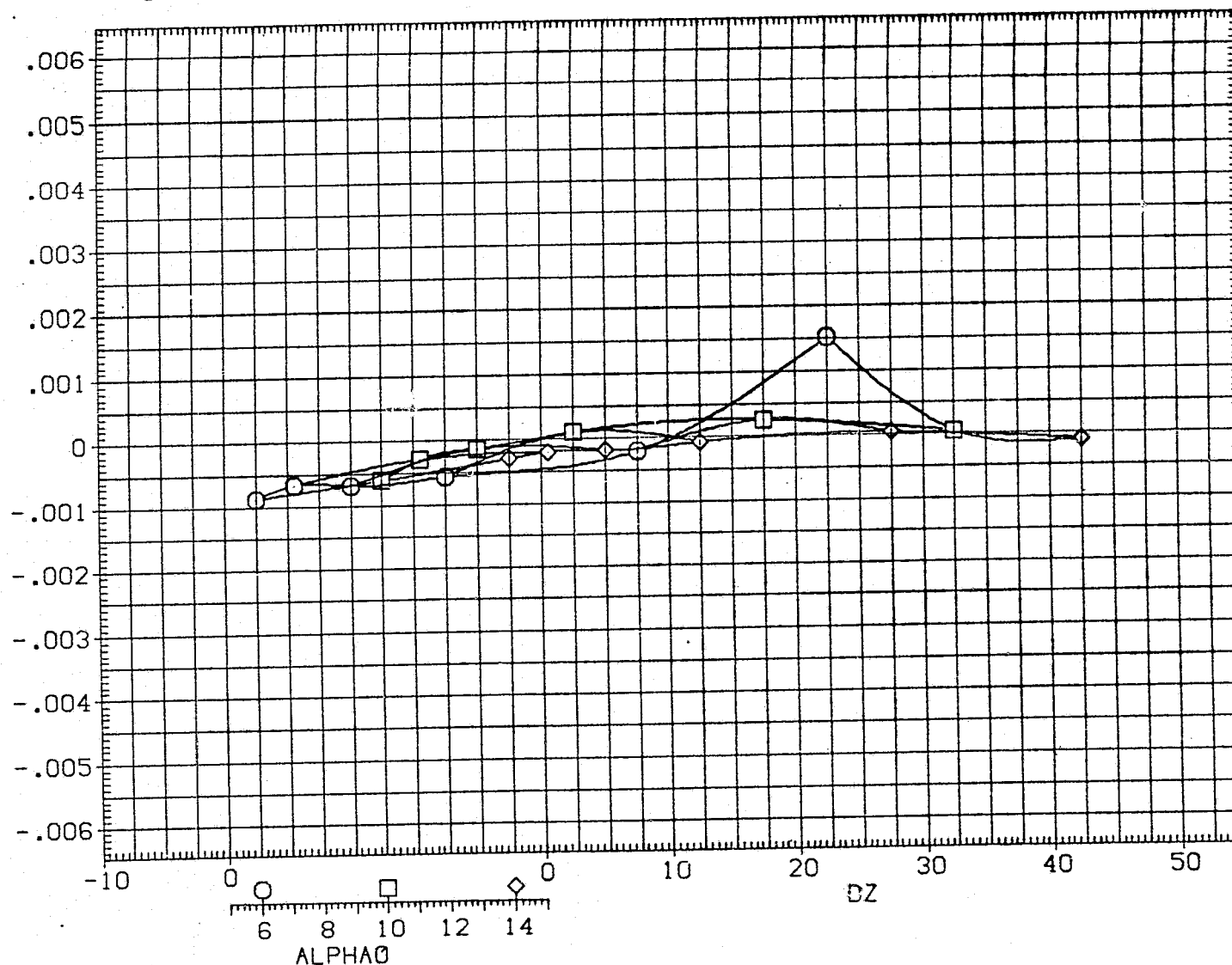


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (049 - 010) (7GN049)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

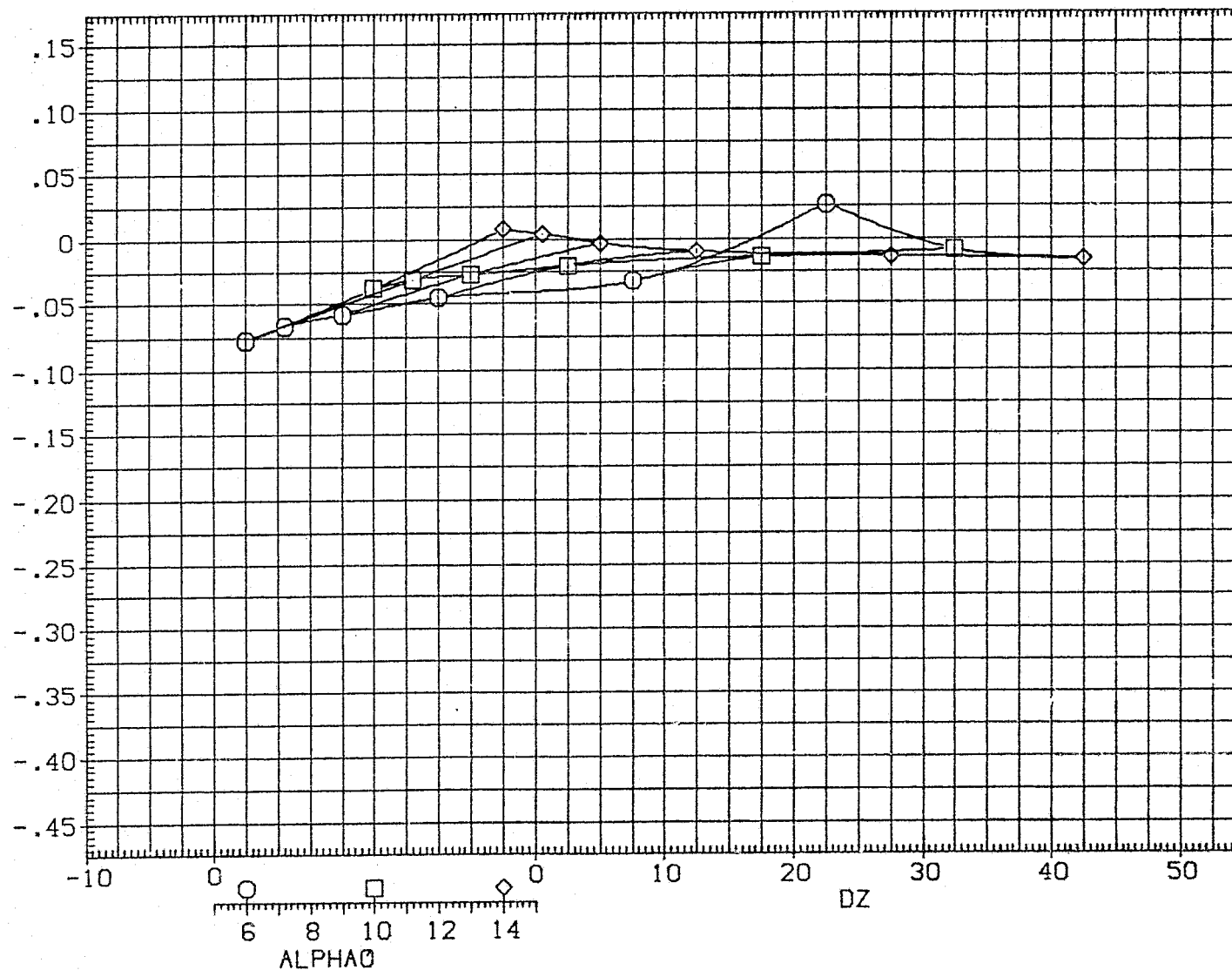


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (049 - 010)(76N049)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
OY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

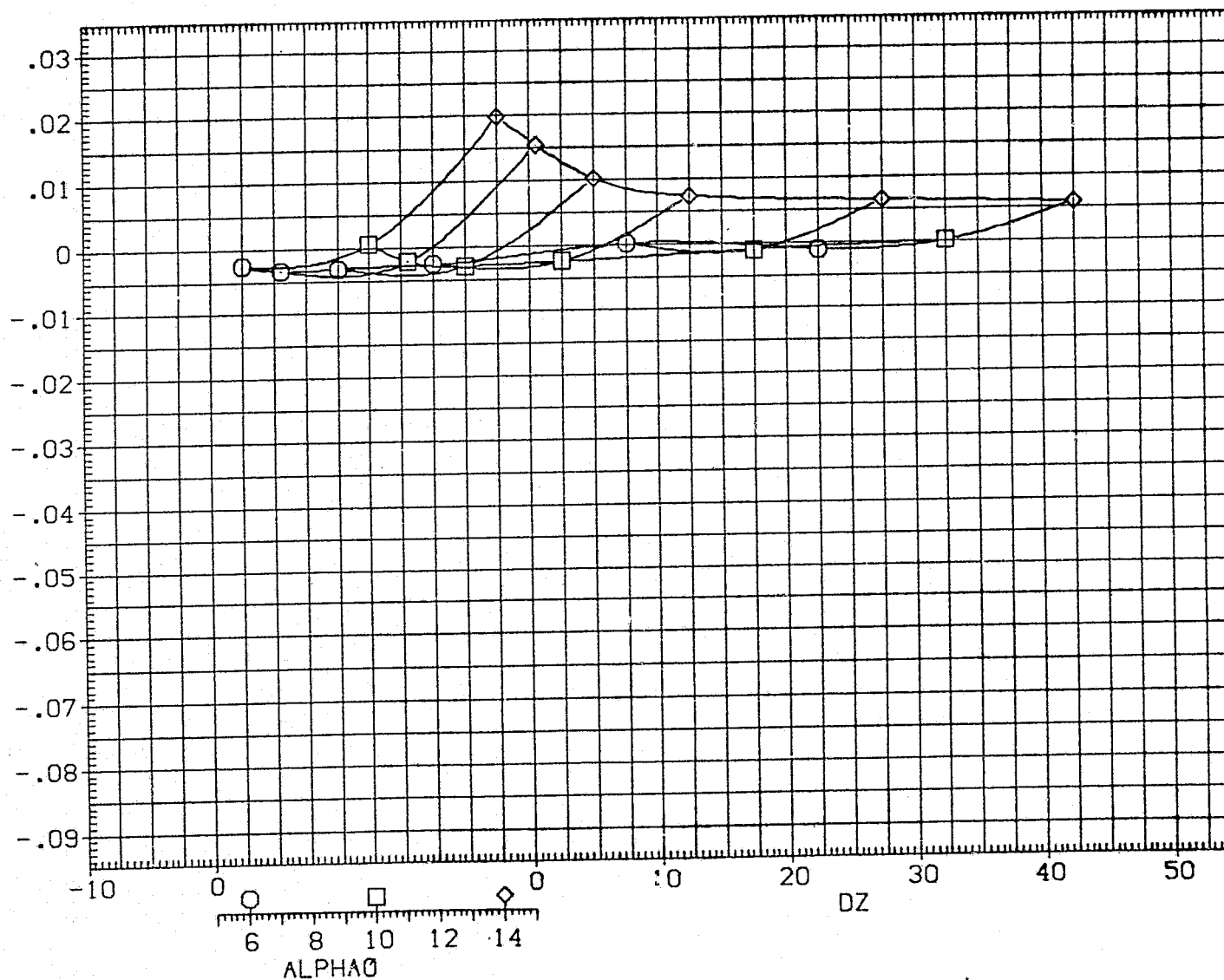


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6600	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

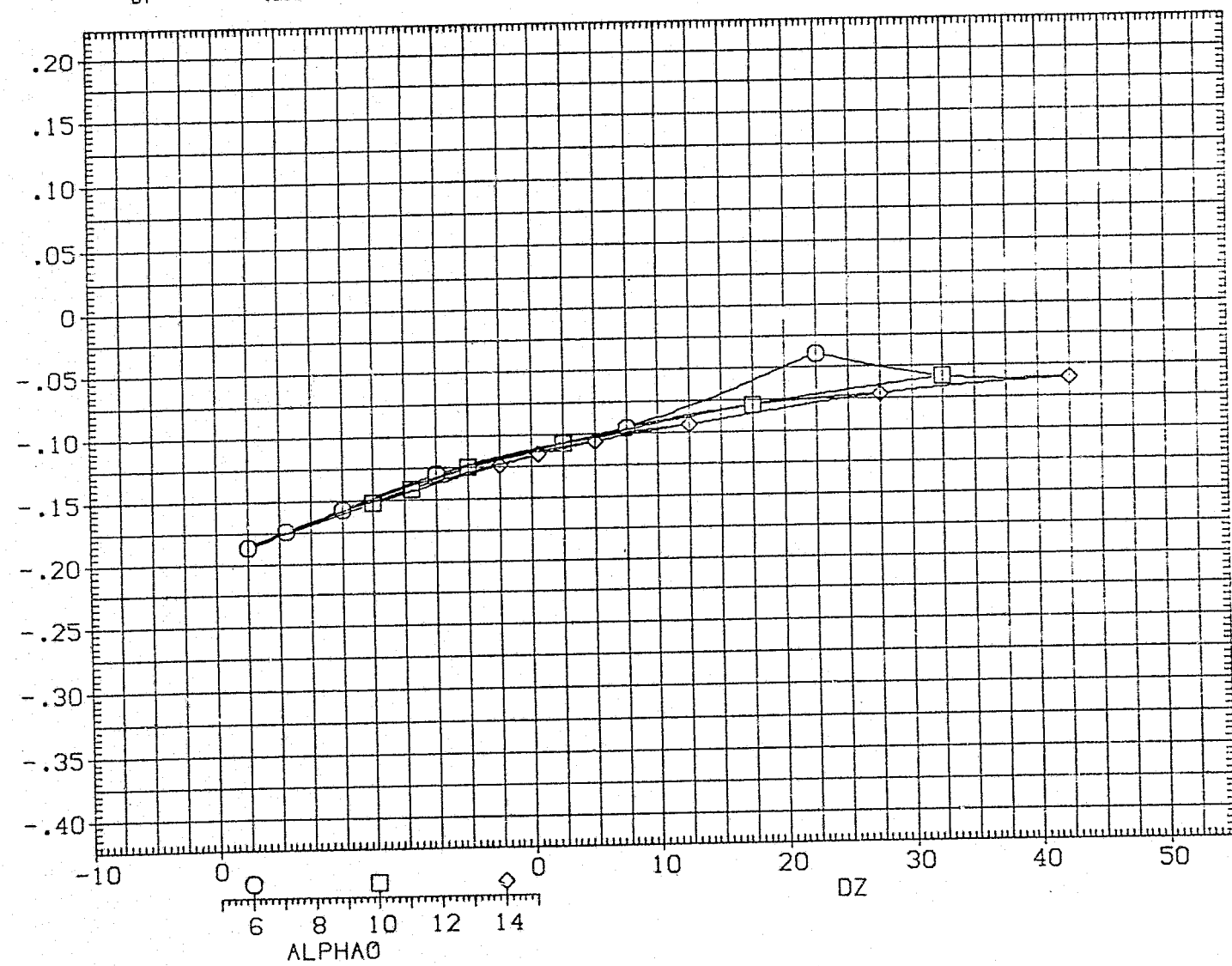


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (052 - 010) (7GN052)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETAO	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

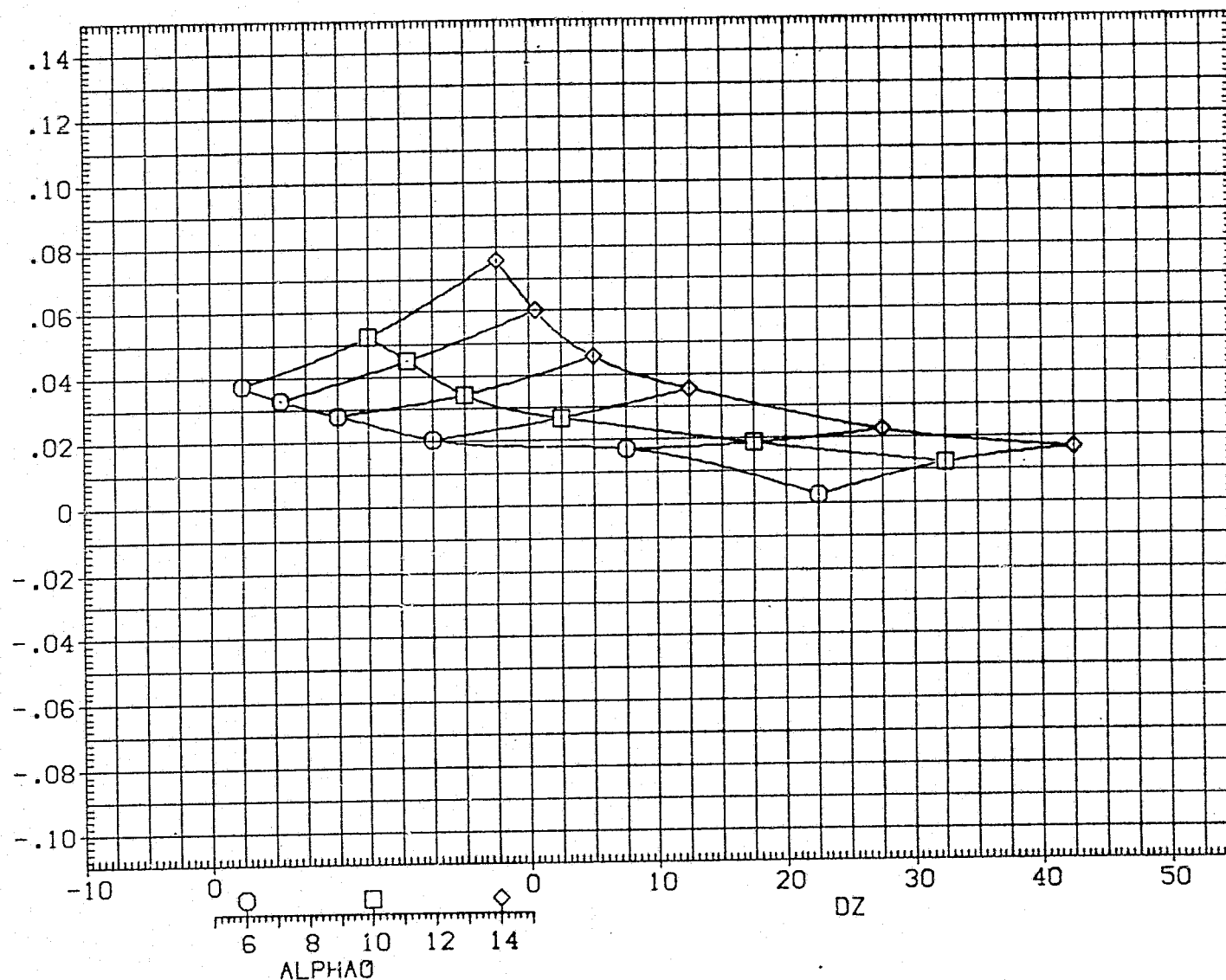


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETAO, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (052 - 010)(7GN052)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

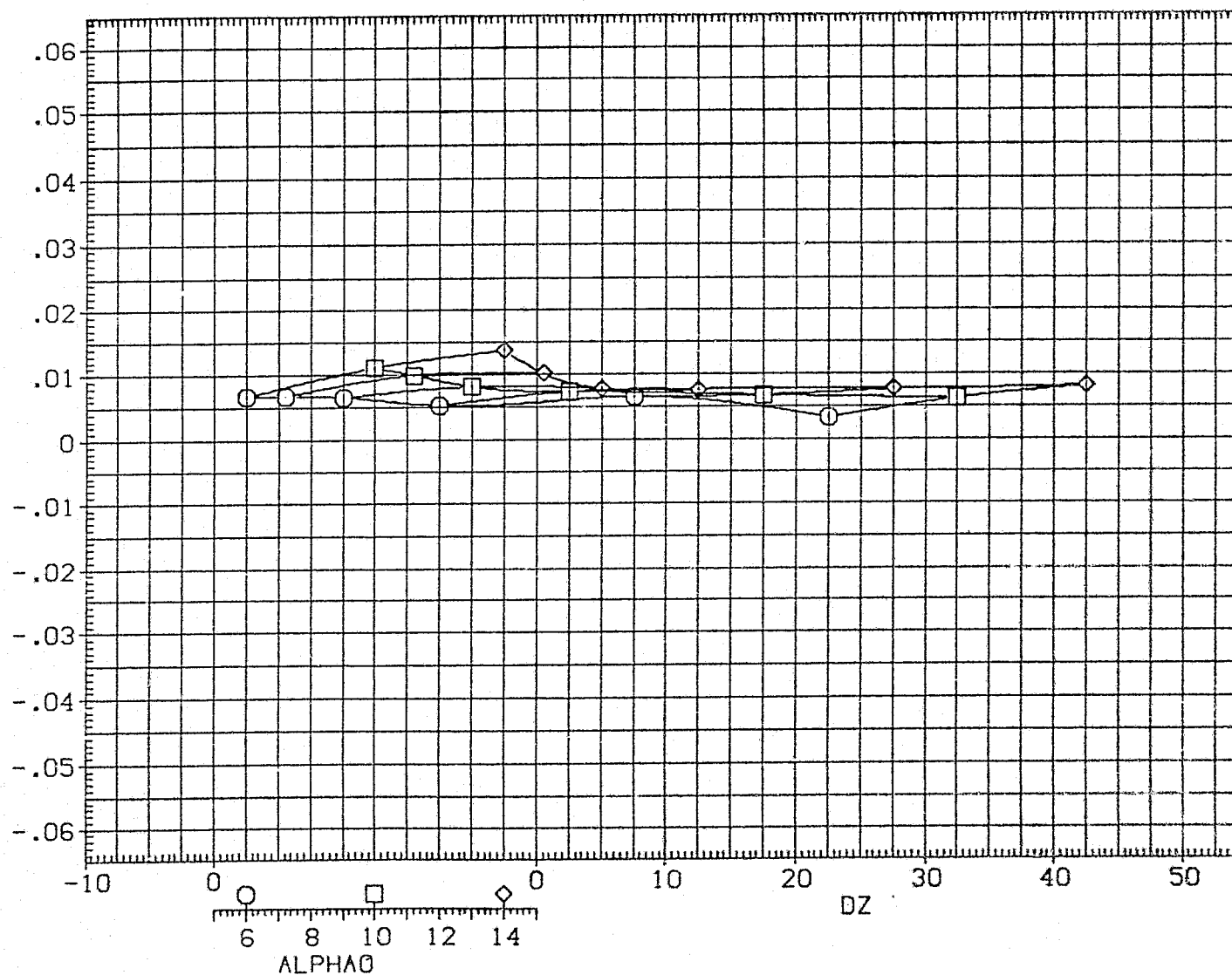


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (052 - 010) (7GN052)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

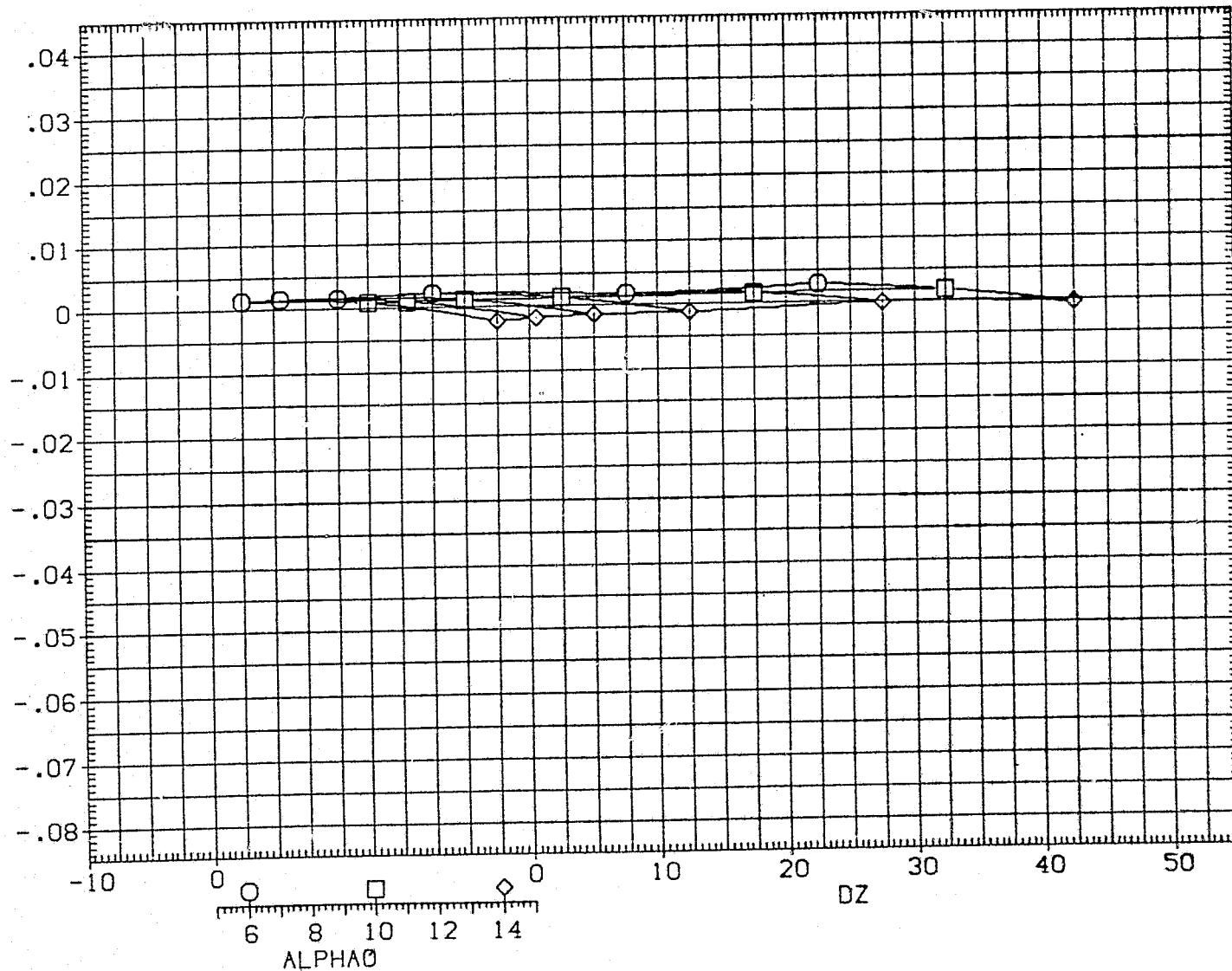


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

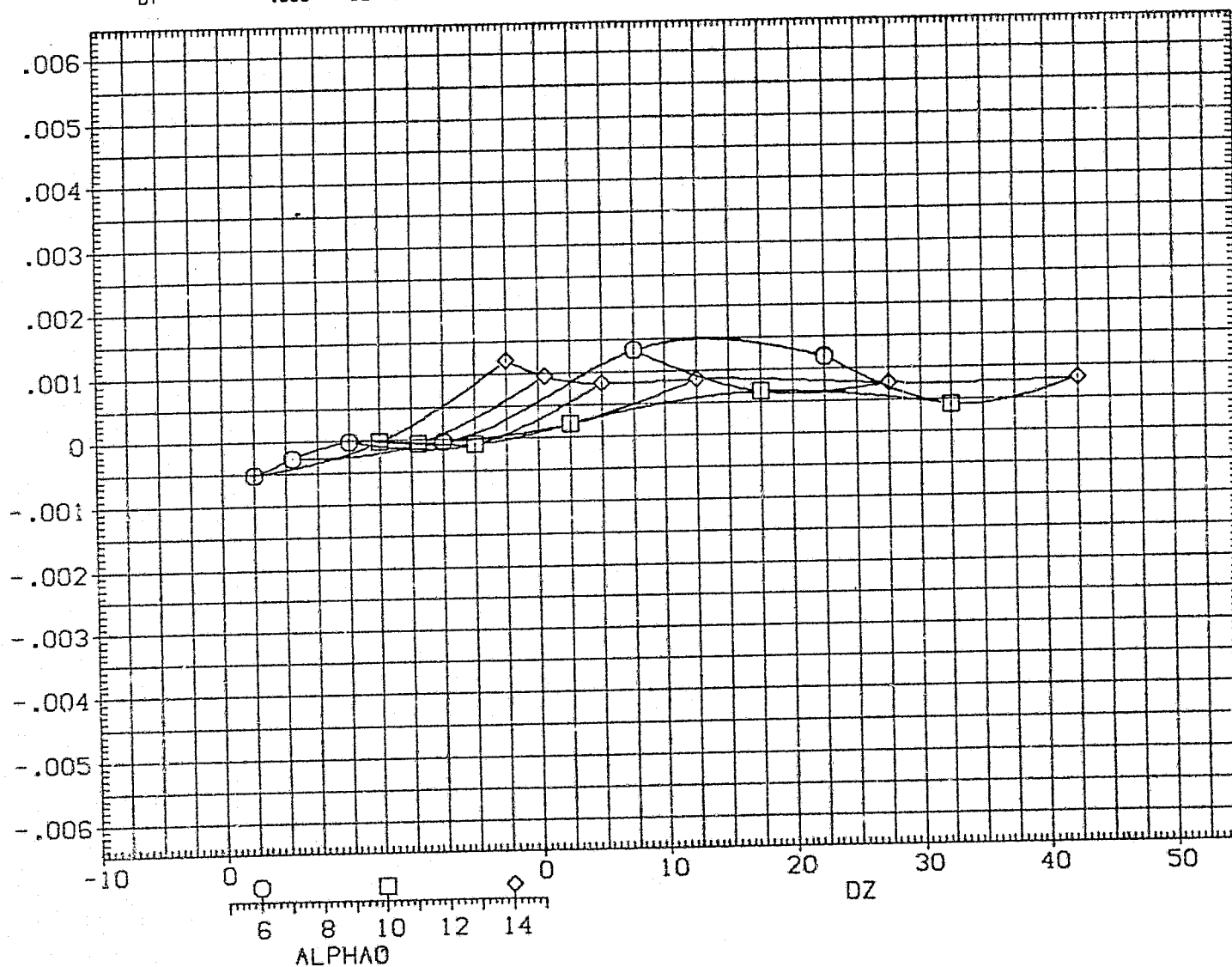


FIG. 39 DELTA Z AND α_0 BIVARIANT EFFECTS ON ORBITER (ϕ , β_0 , $\beta_{AC} = 0$)

CA20 (747/1 01 S1) - (01 S1) D/S (052 - 010)(7GN052)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

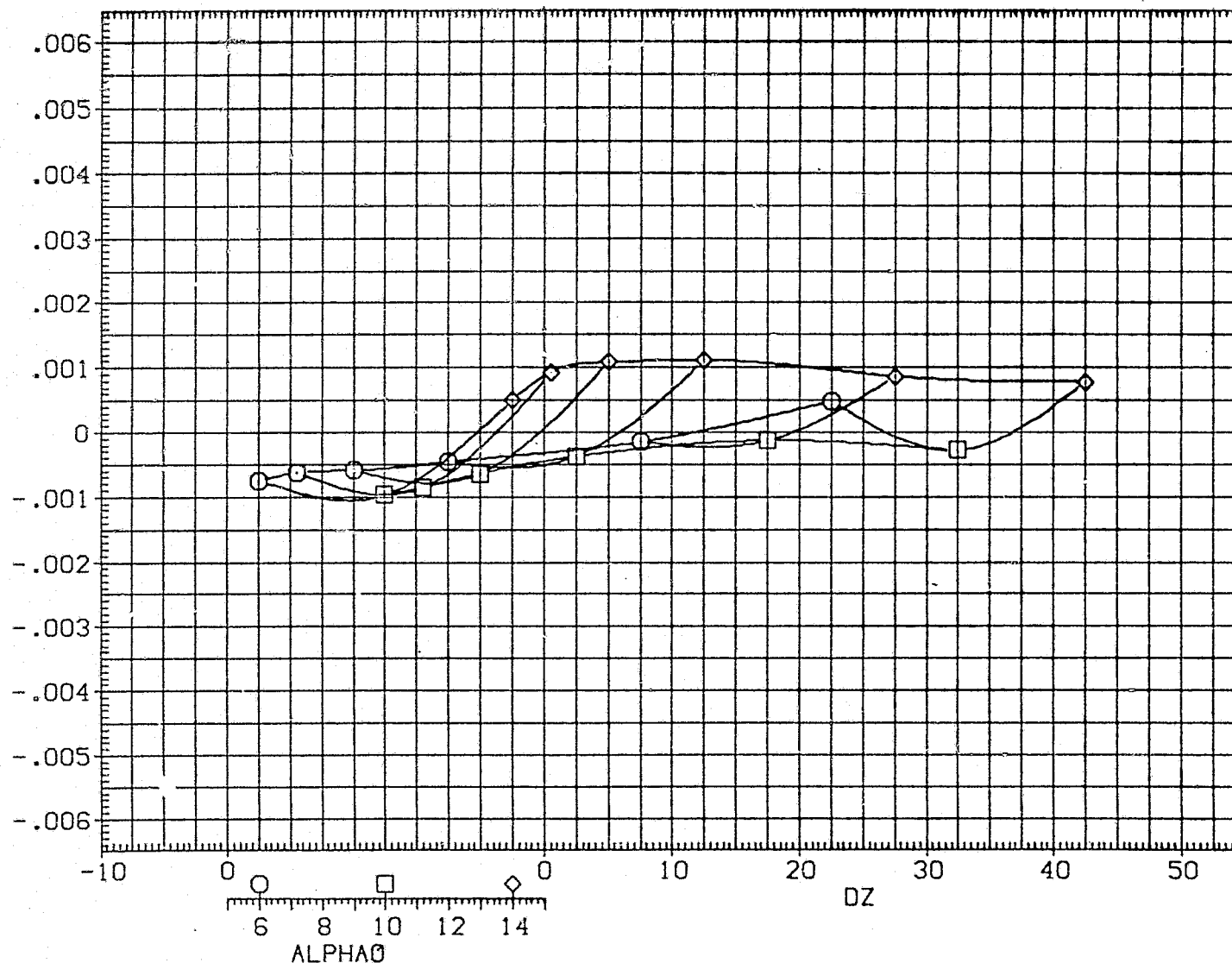


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (052 - 010) (76N052)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
OY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

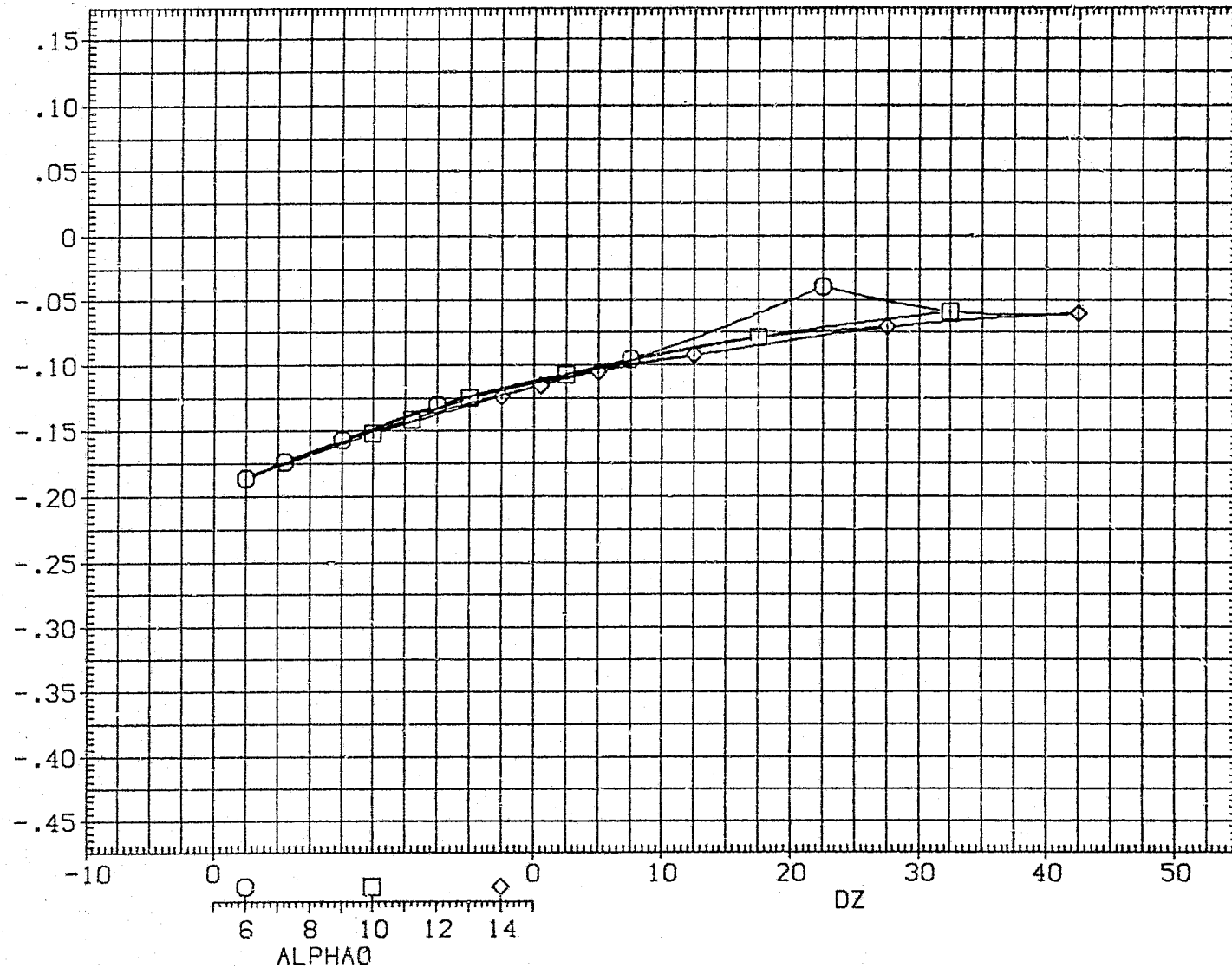


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (052 - 010)(76N052)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
OY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

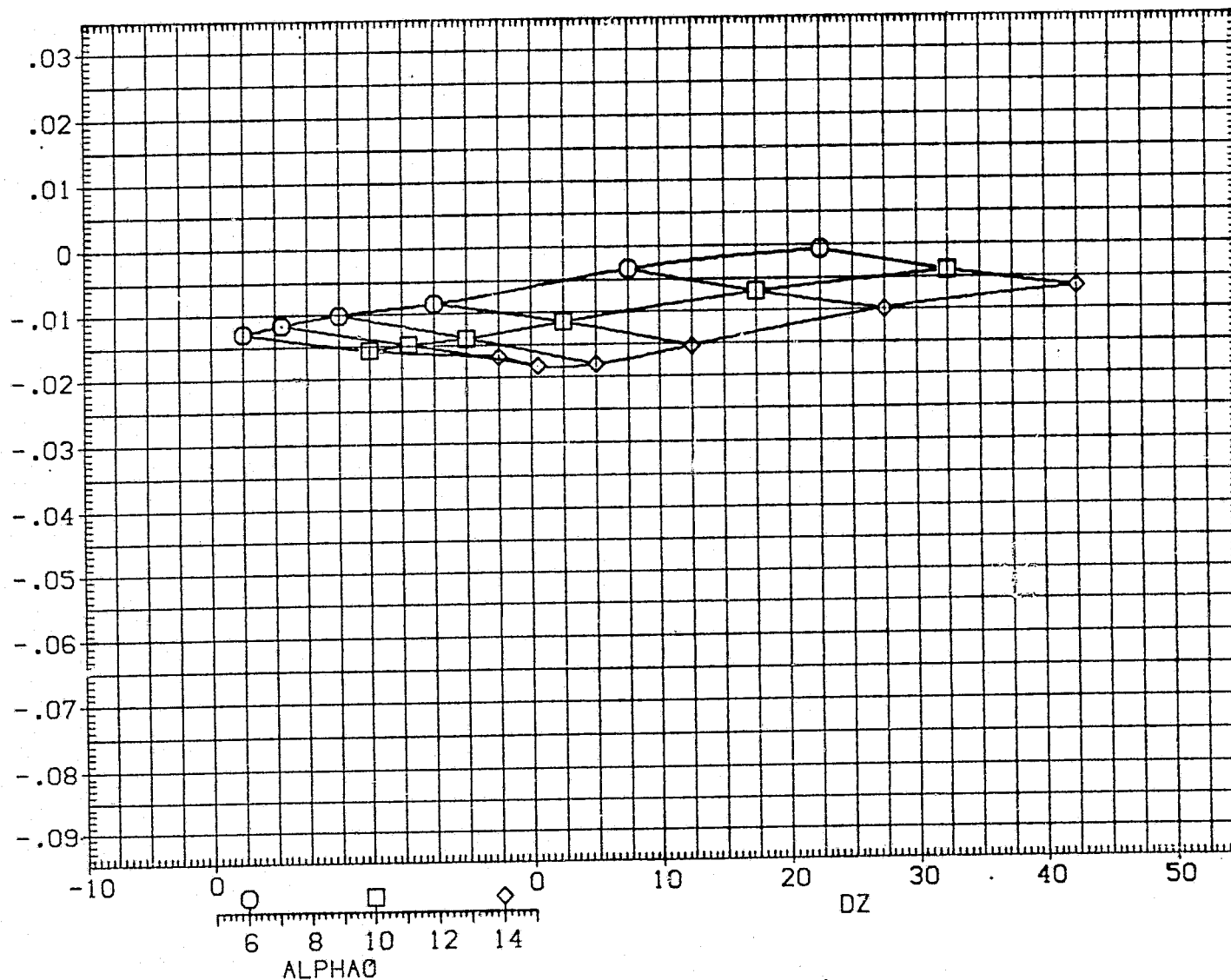


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC = 0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

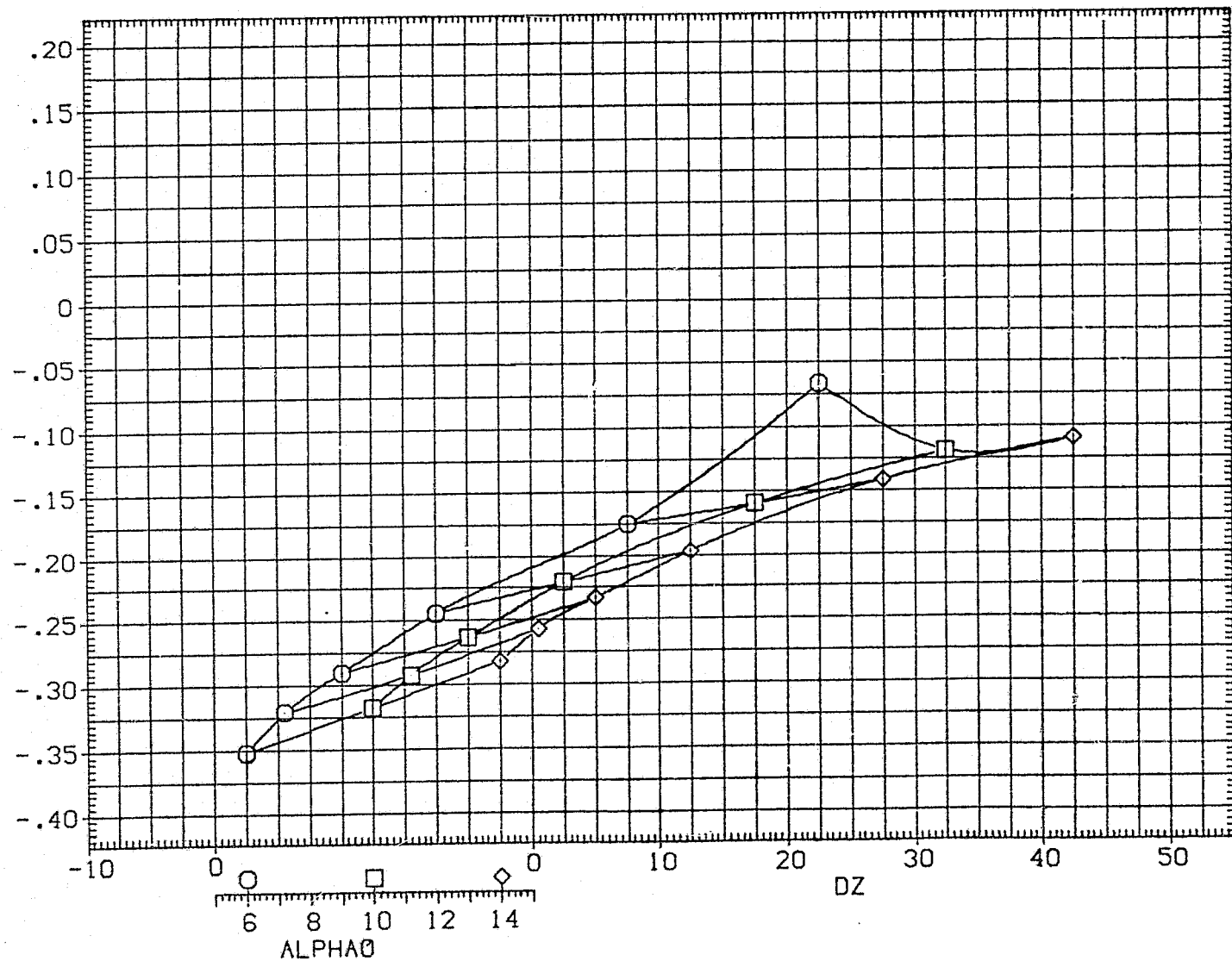


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (055 - 010)(7GN055)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

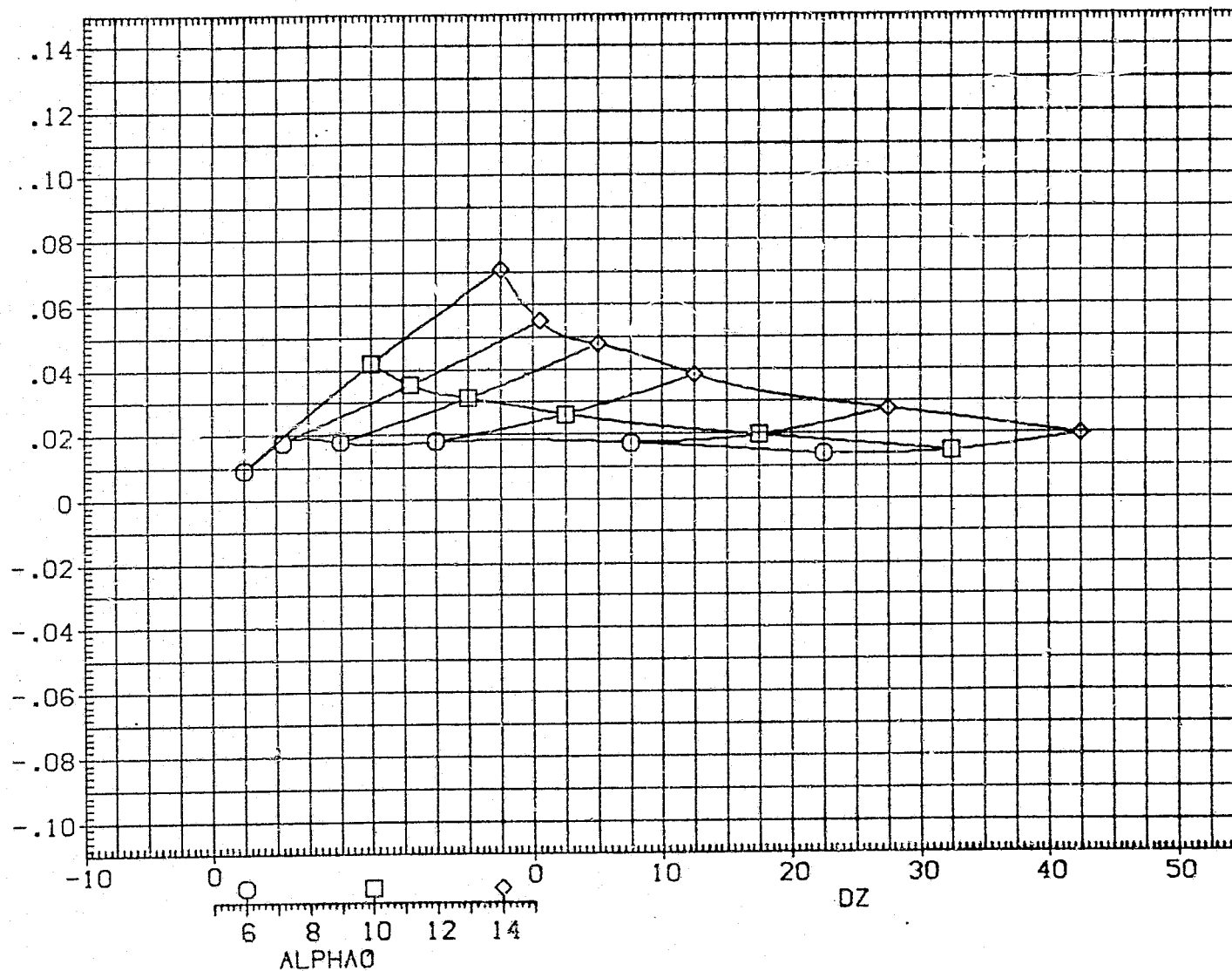


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

C.12

CA20 (747/1 71 S1) - (01 S1)

D/S (055 - 010) (76N055)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

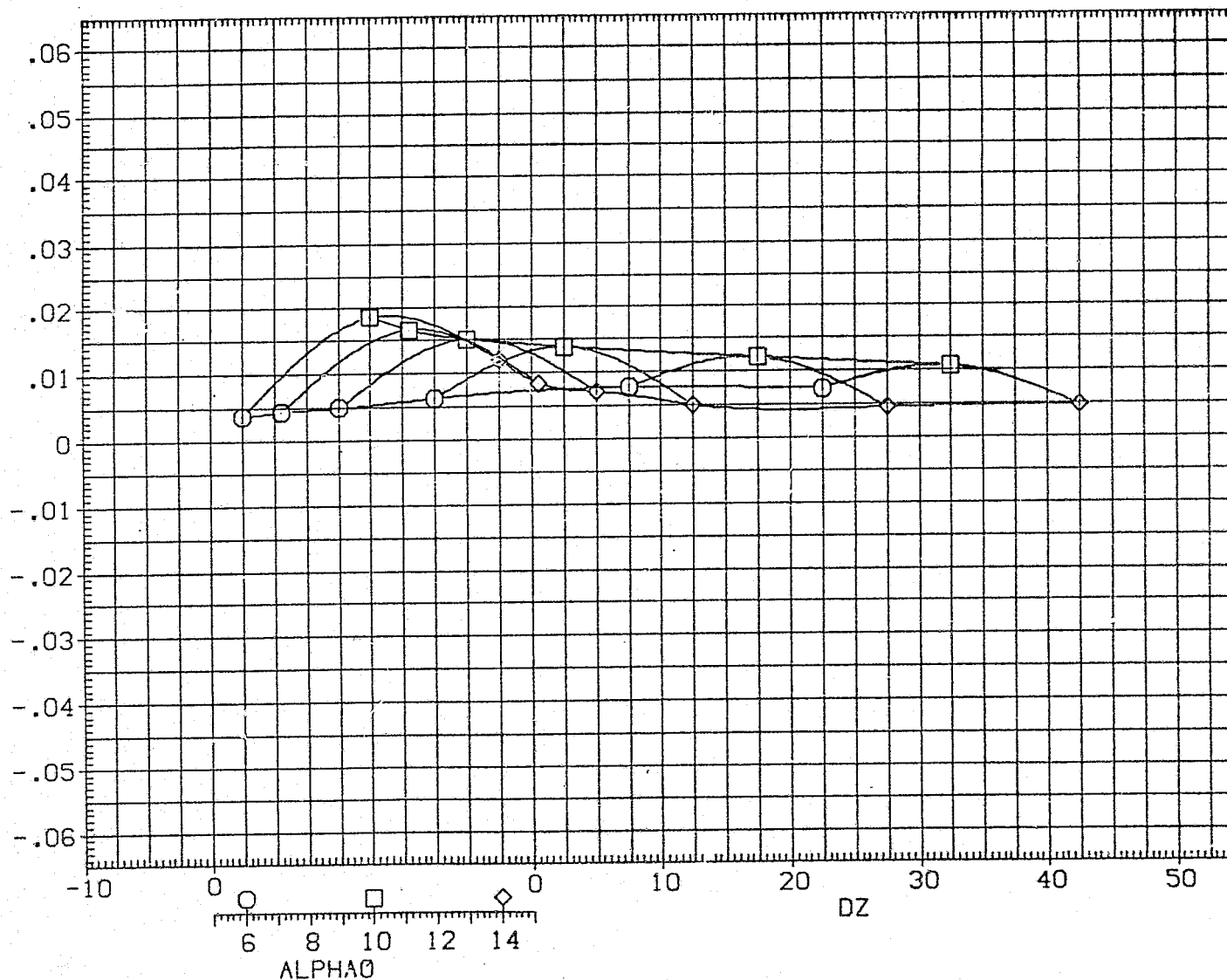


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (055 - 010)(76N055)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

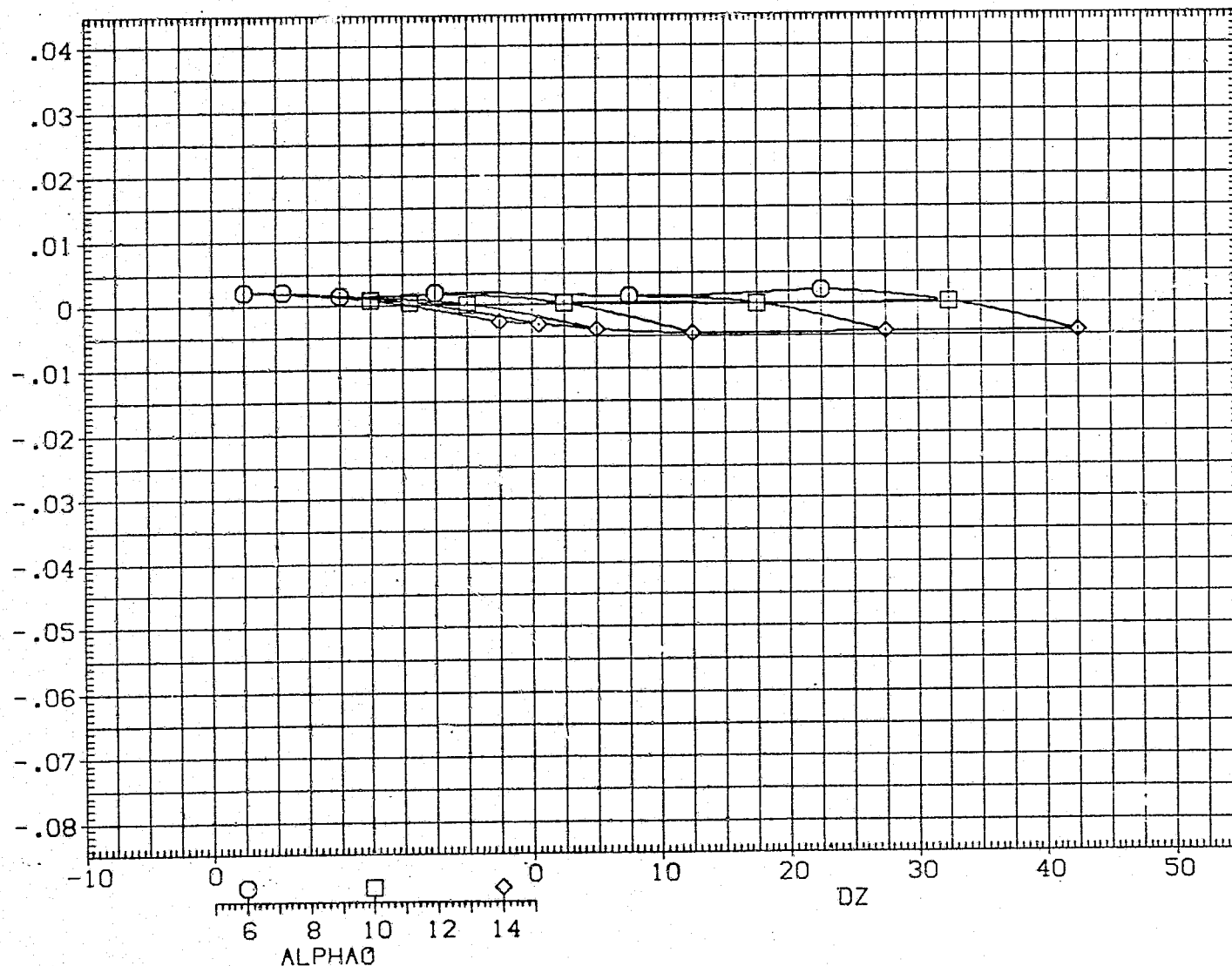


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

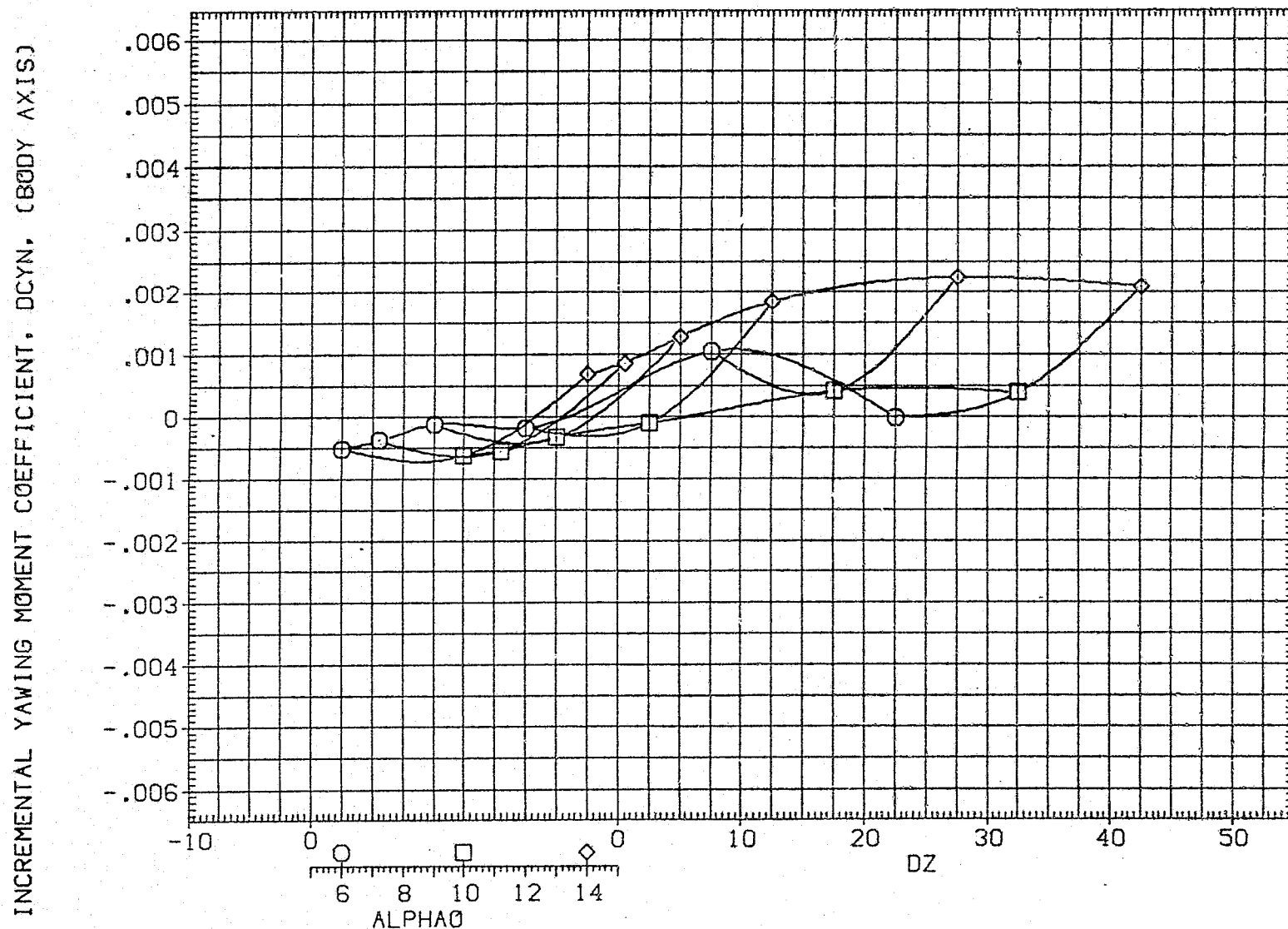


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (055 - 010)(7GN055)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2650.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL. (BODY AXIS)

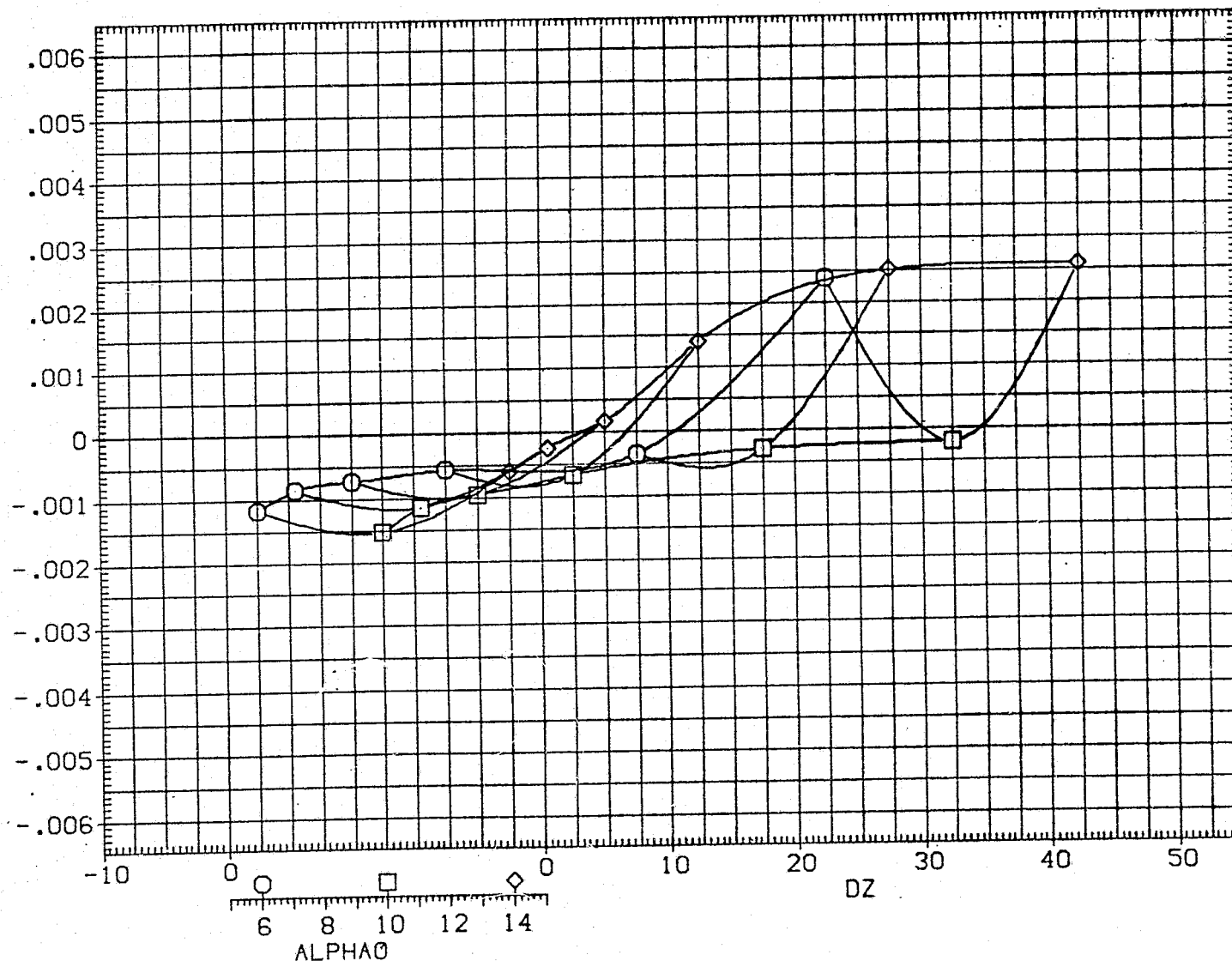


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.F1.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

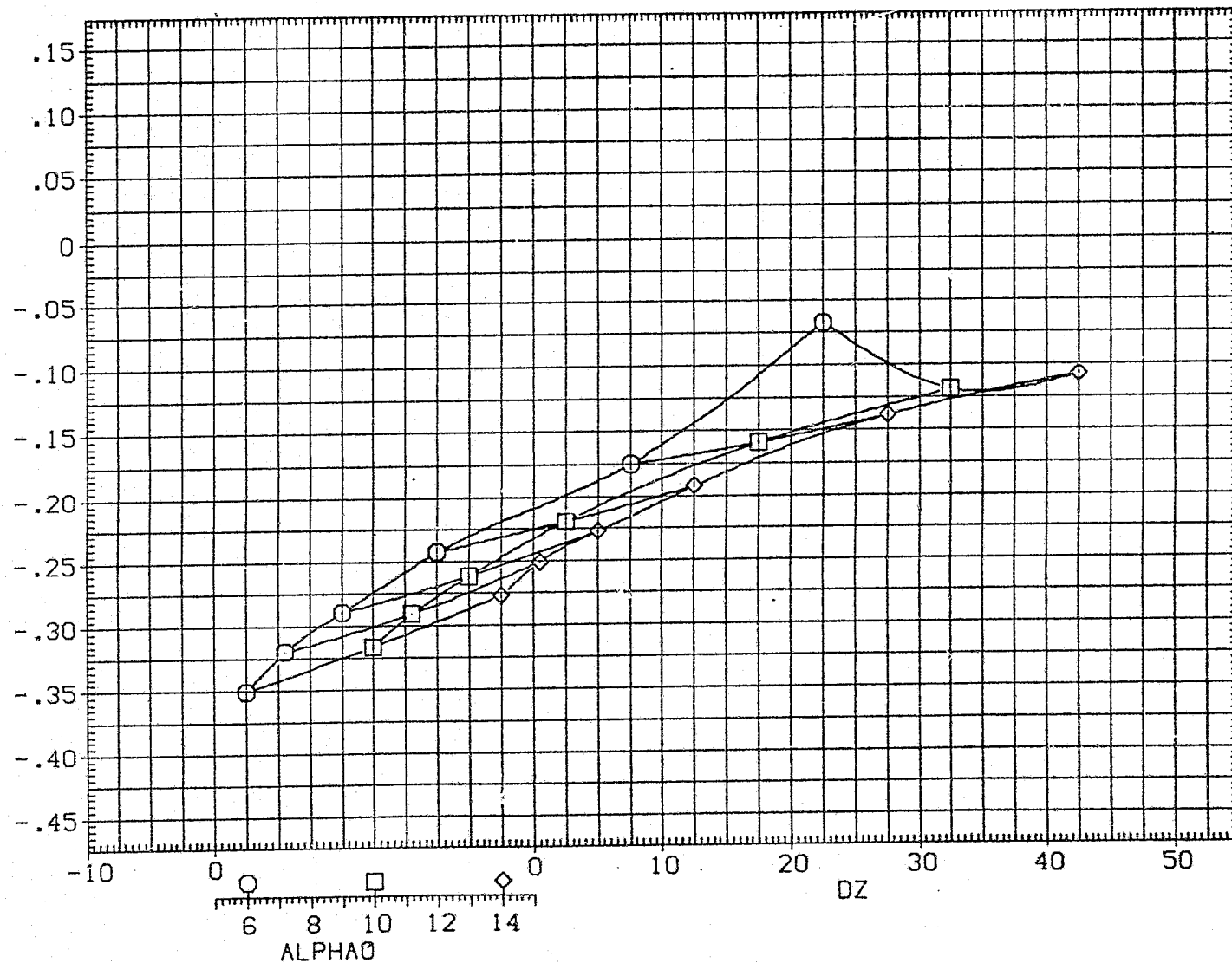


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (055 - 010)(76N055)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

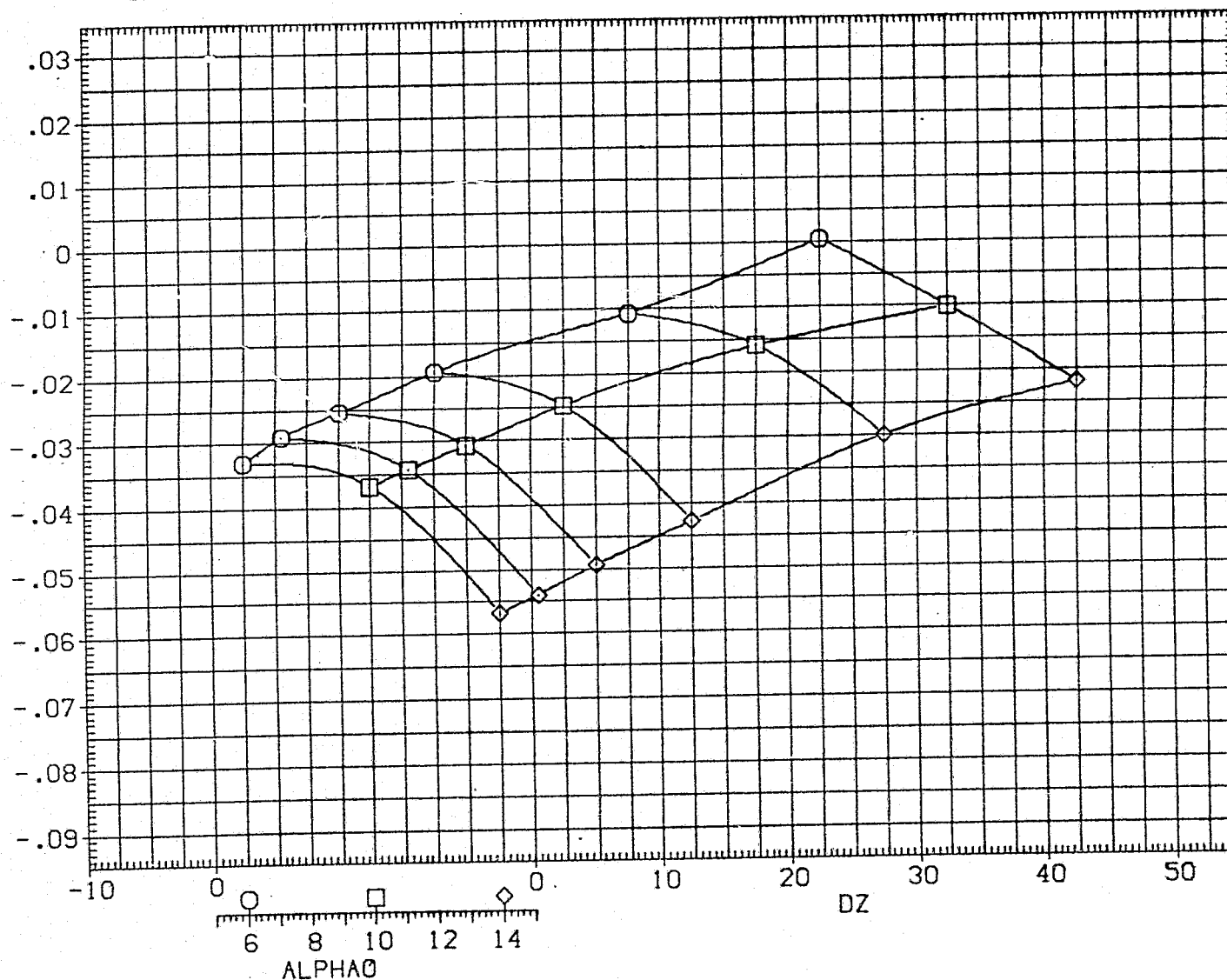


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

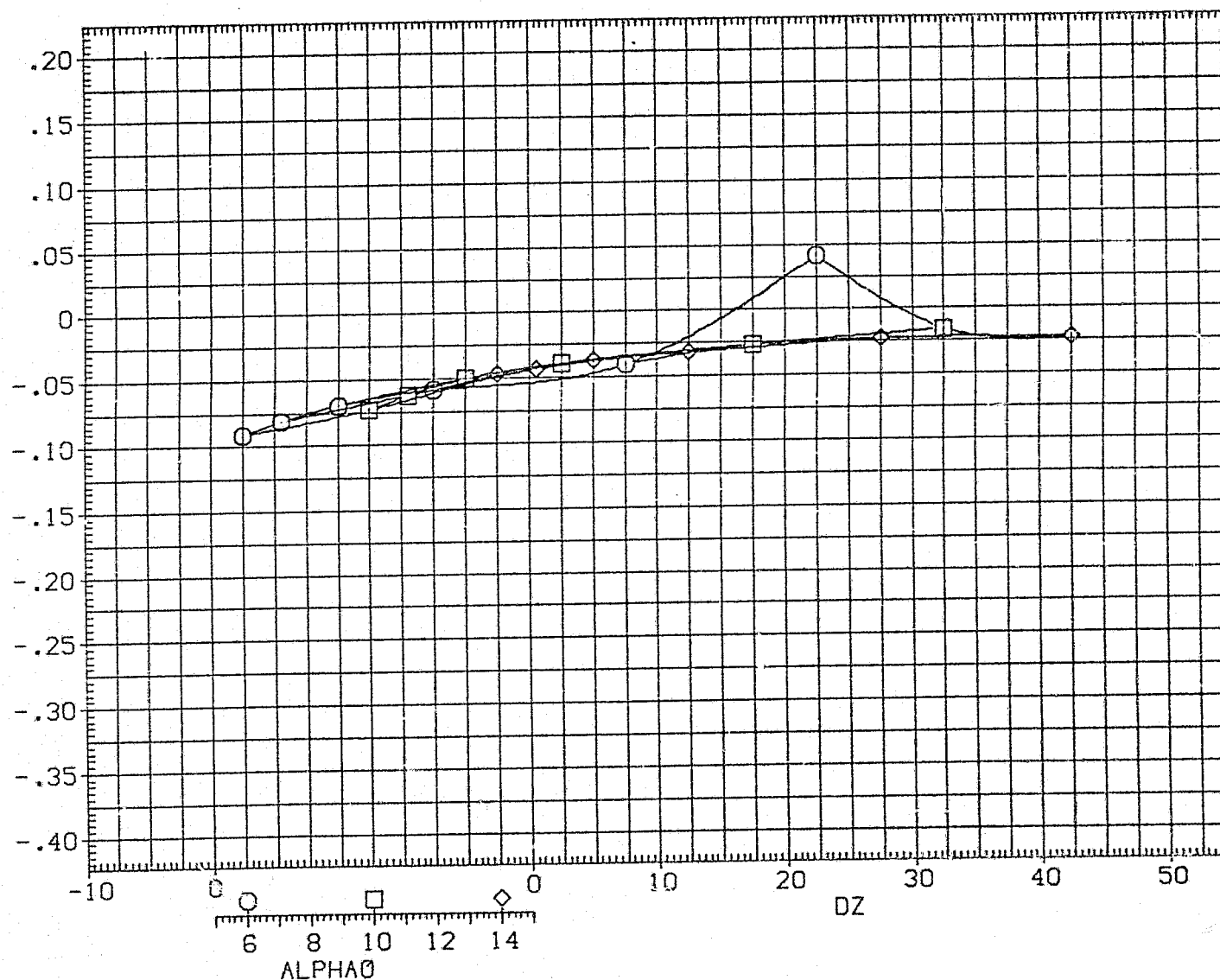


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (050 - 010) (76N050)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

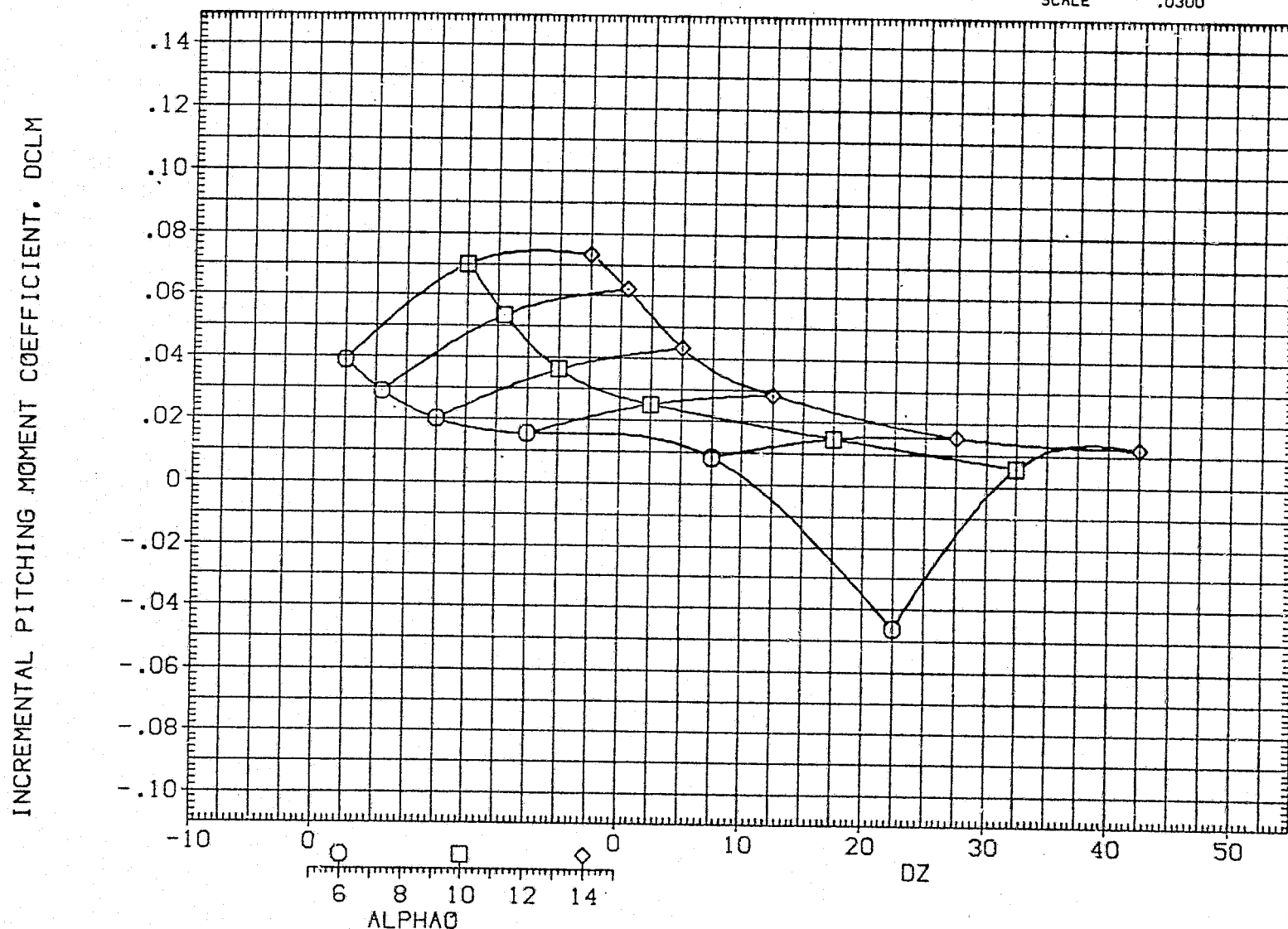


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	975.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

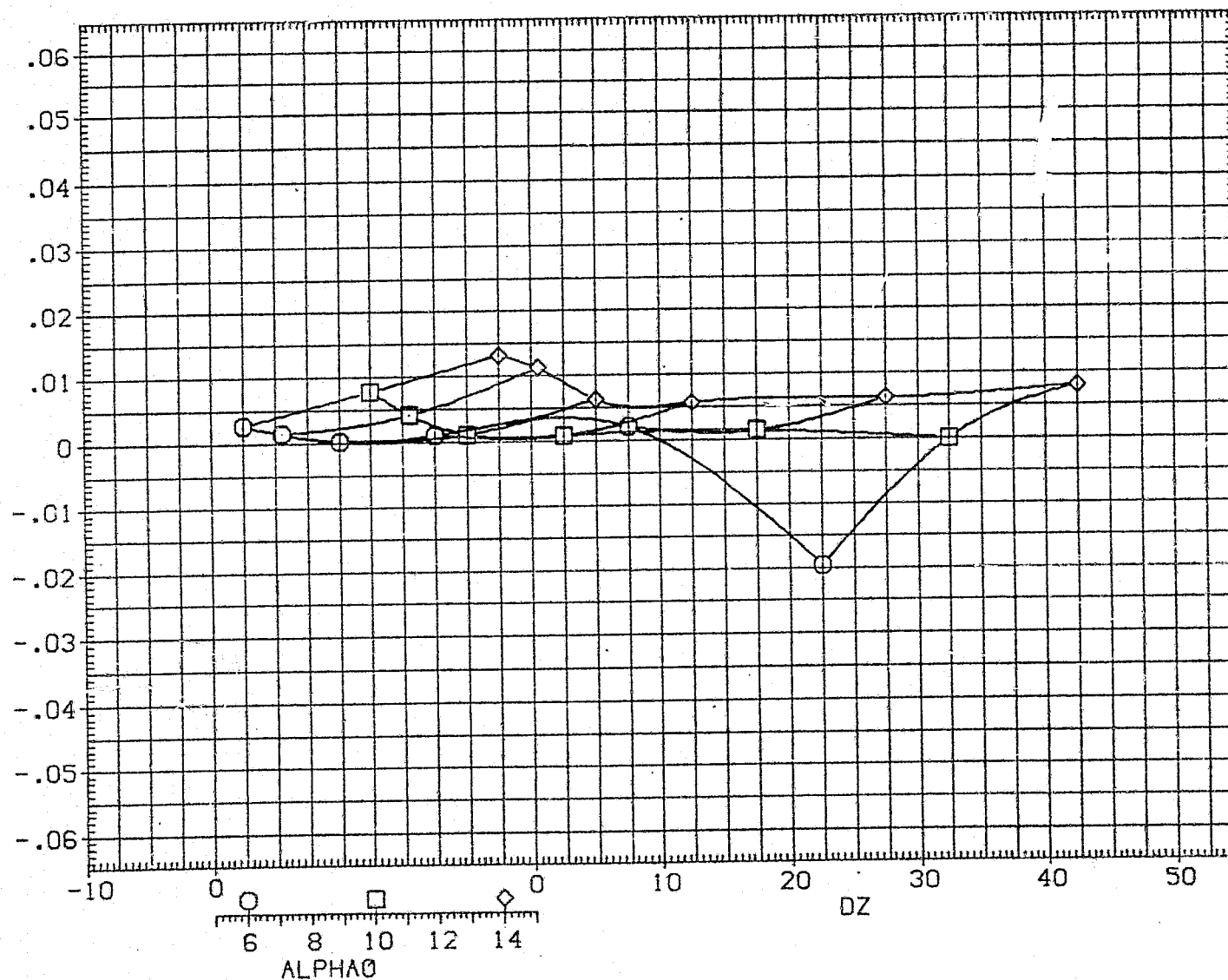


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (050 - 010)(76N050)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

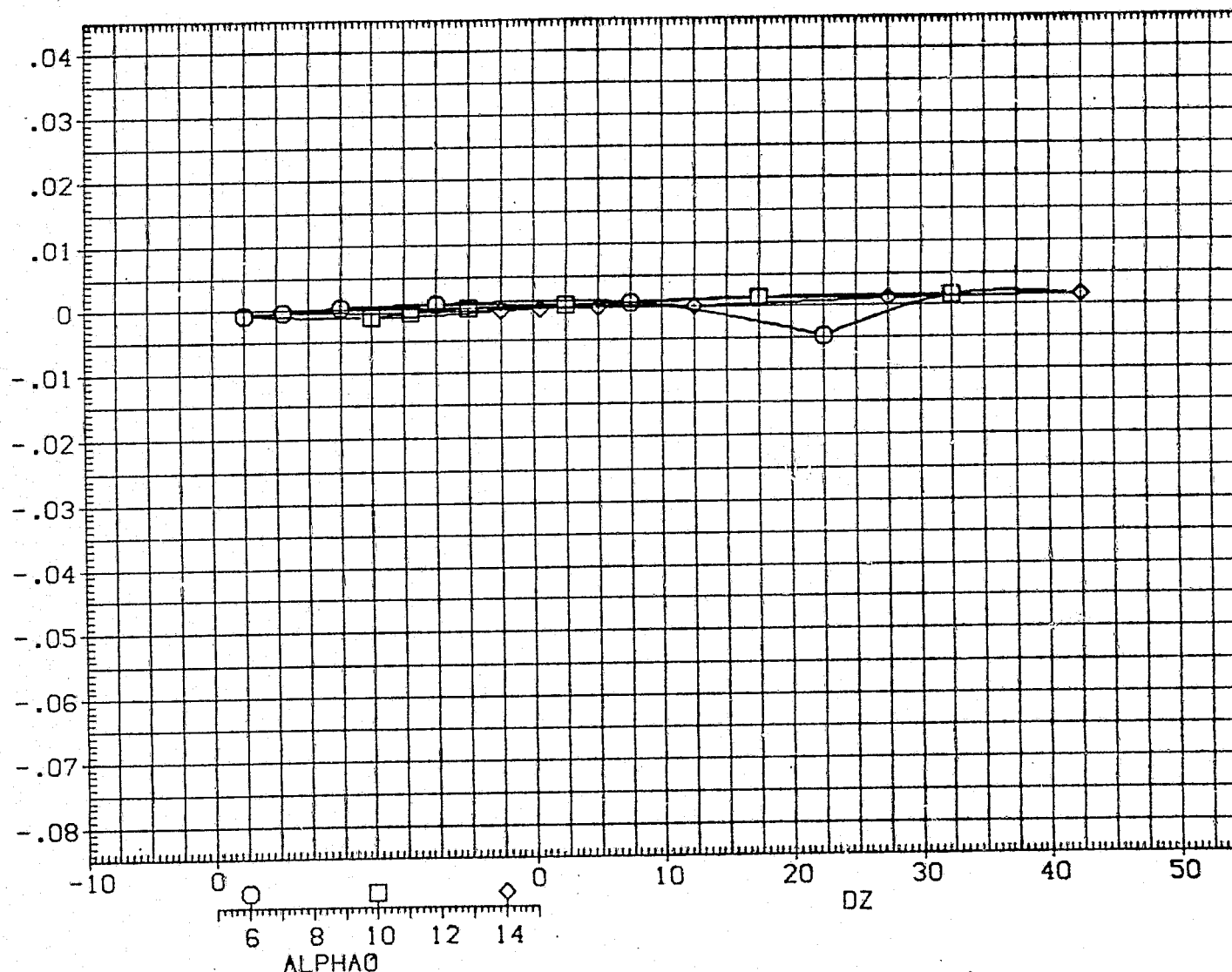


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC = 0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2680.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMWP	1109.0000	IN.XC
YMWP	.0000	IN.YO
ZMWP	375.0000	IN.ZO
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

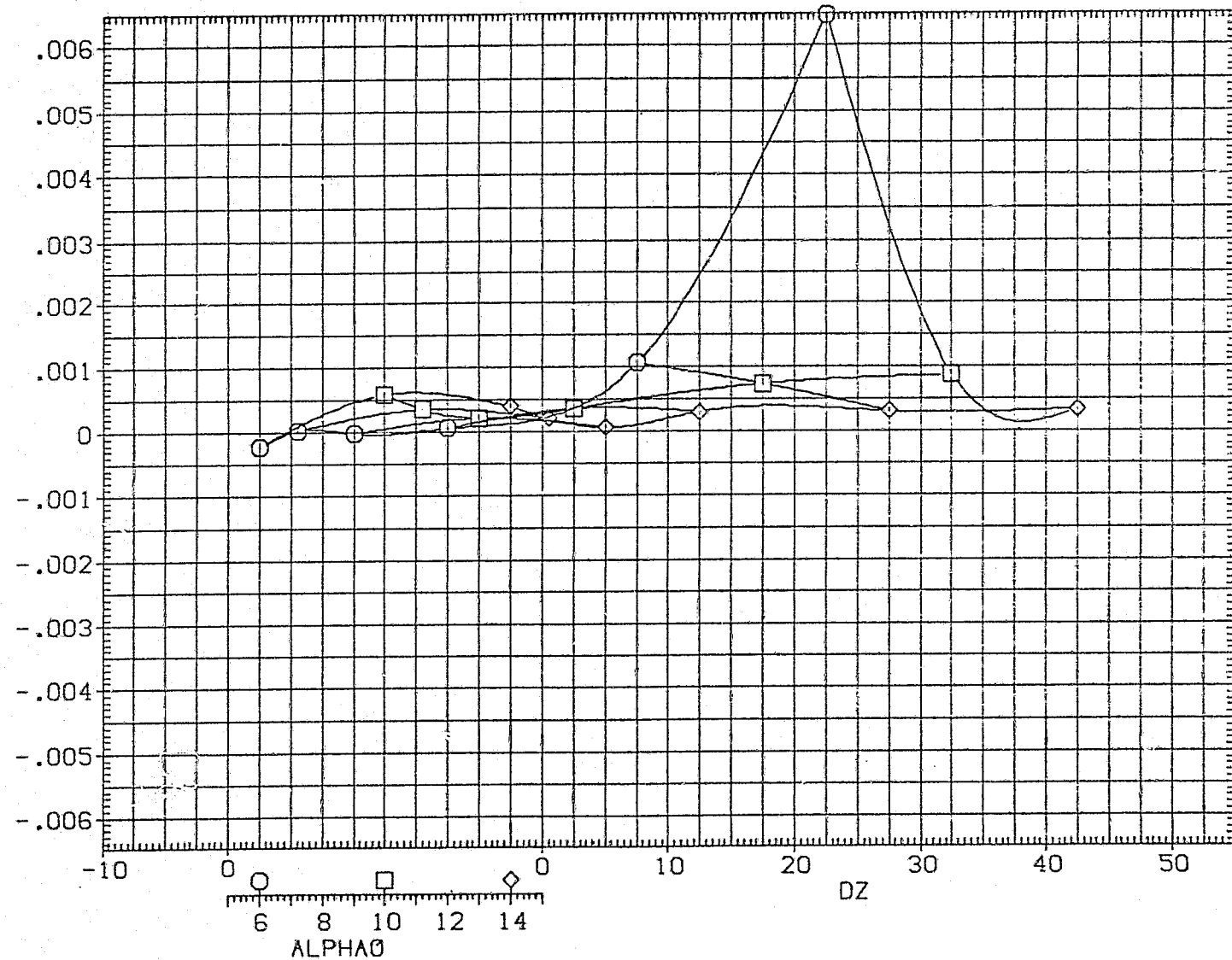


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (050 - 010) (76N050)

PARAMETRIC VALUES

ALPHA0	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.600
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

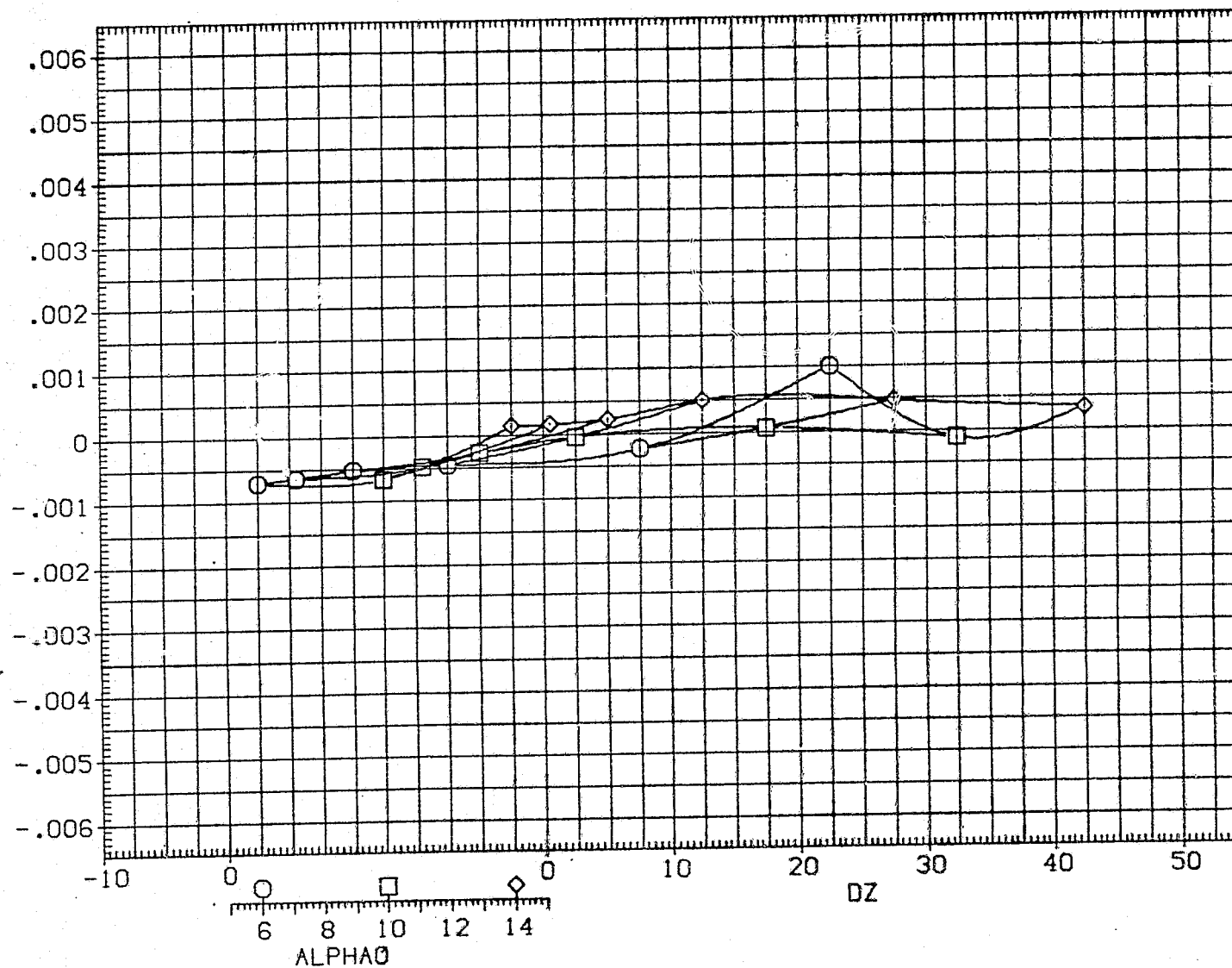


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

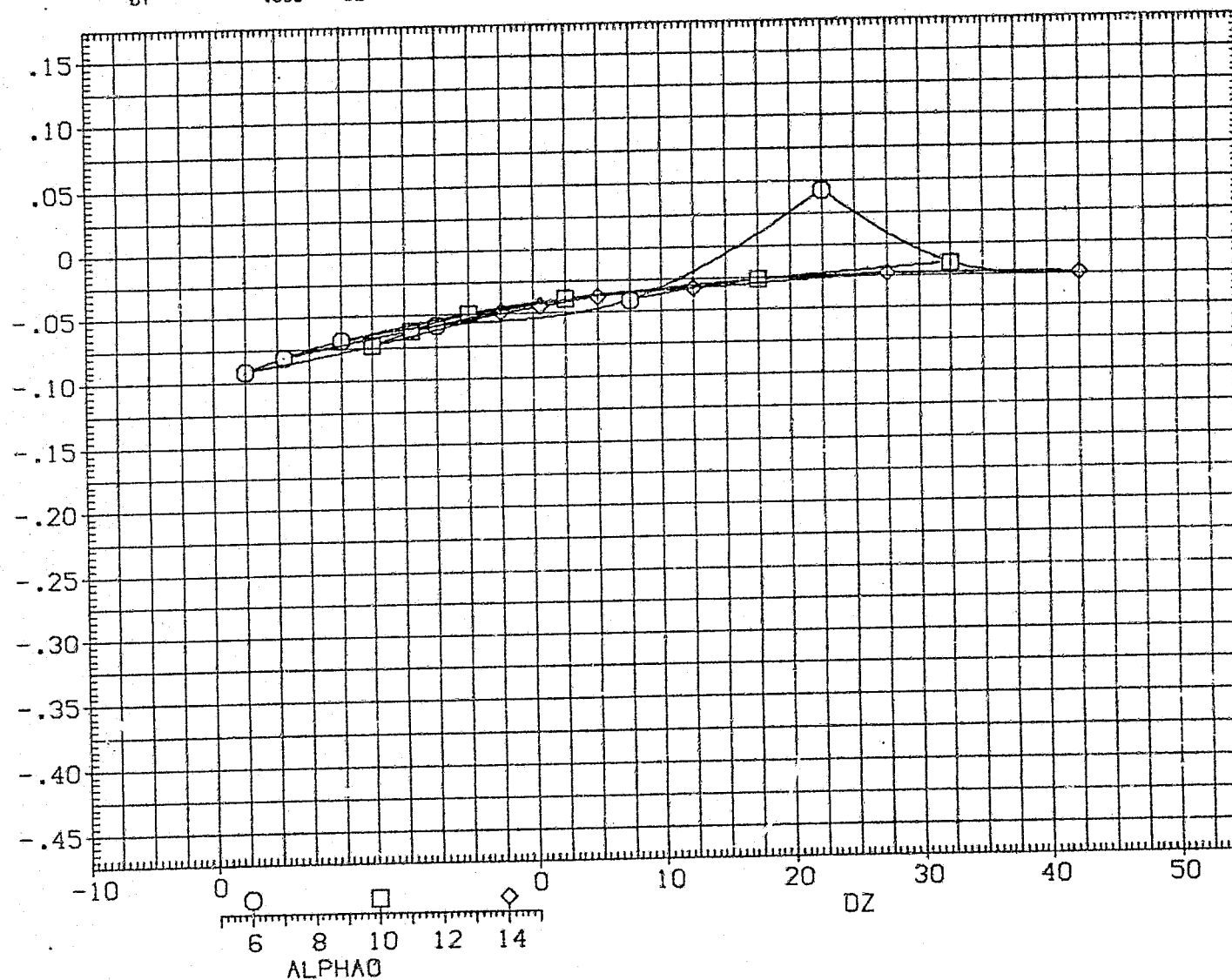


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (050 - 010)(76N050)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

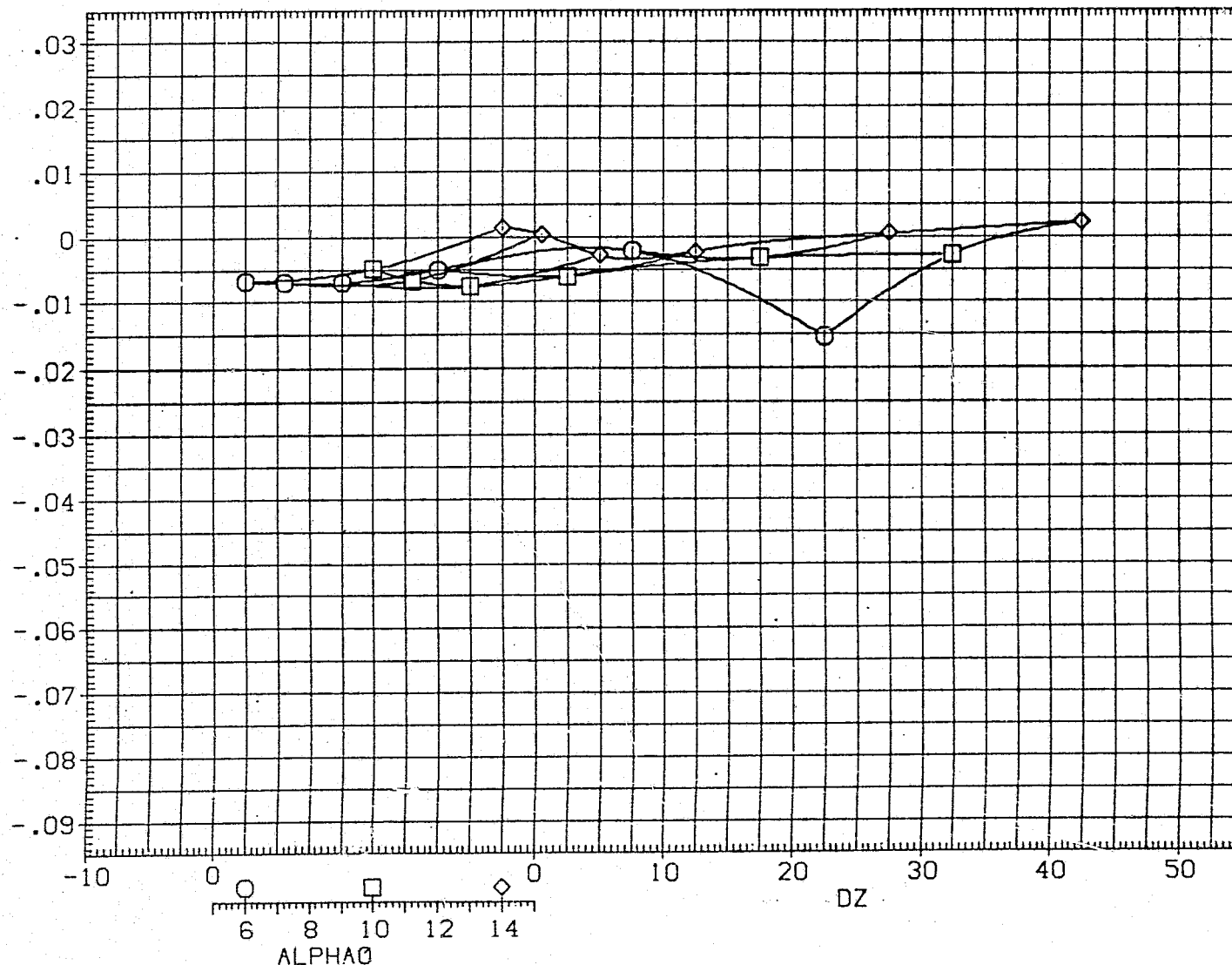


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

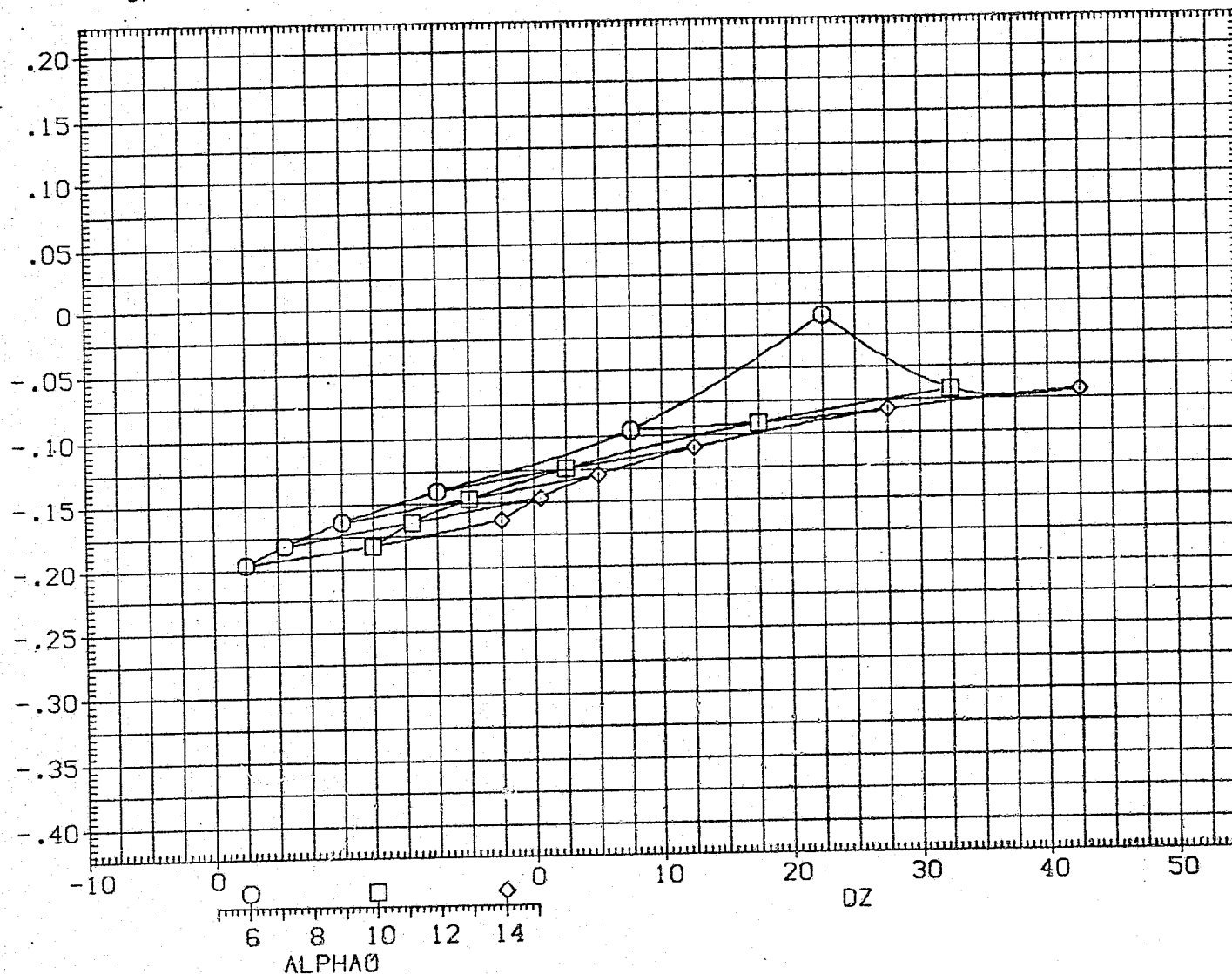


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (053 - 010)(7GN053)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

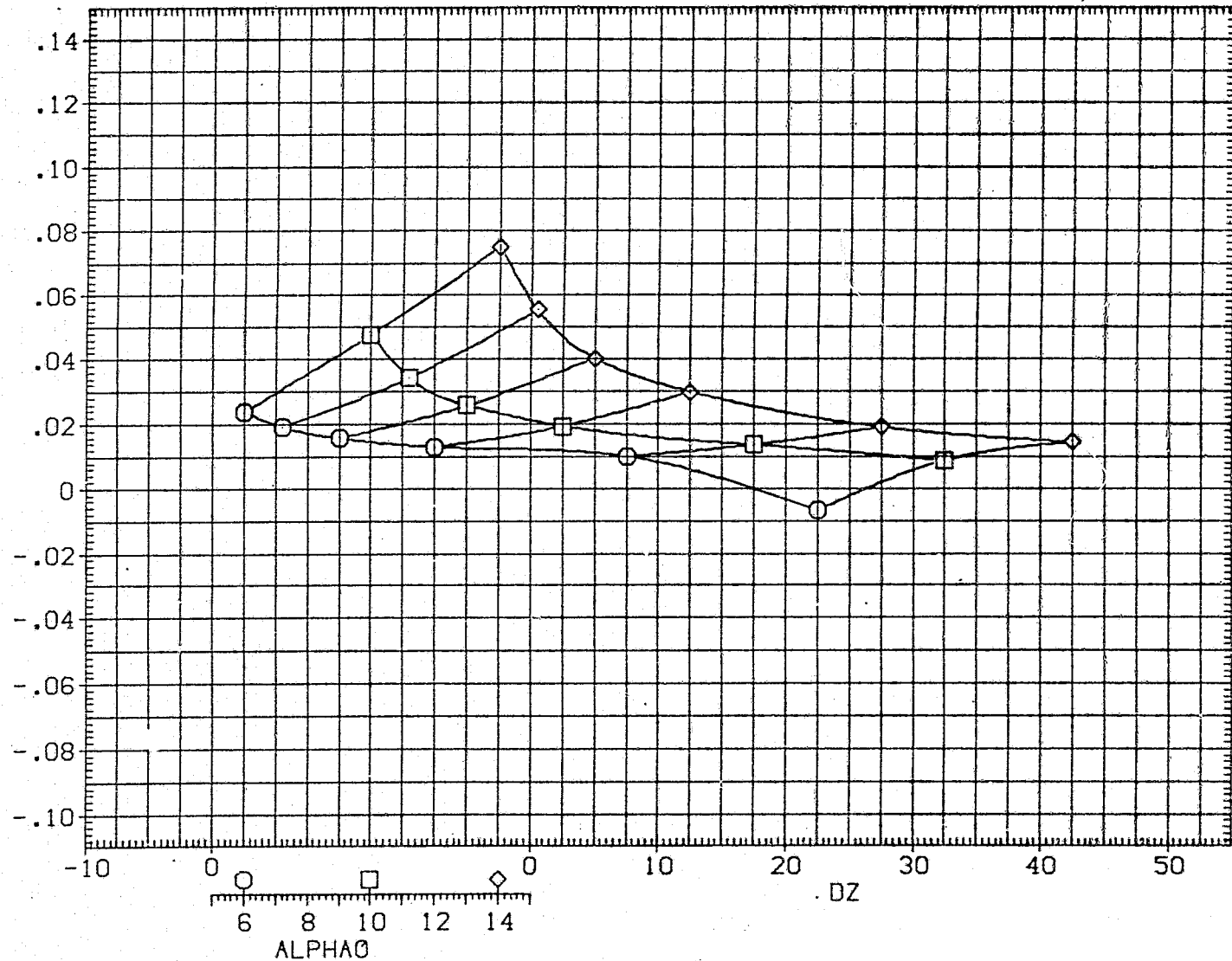


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SD.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

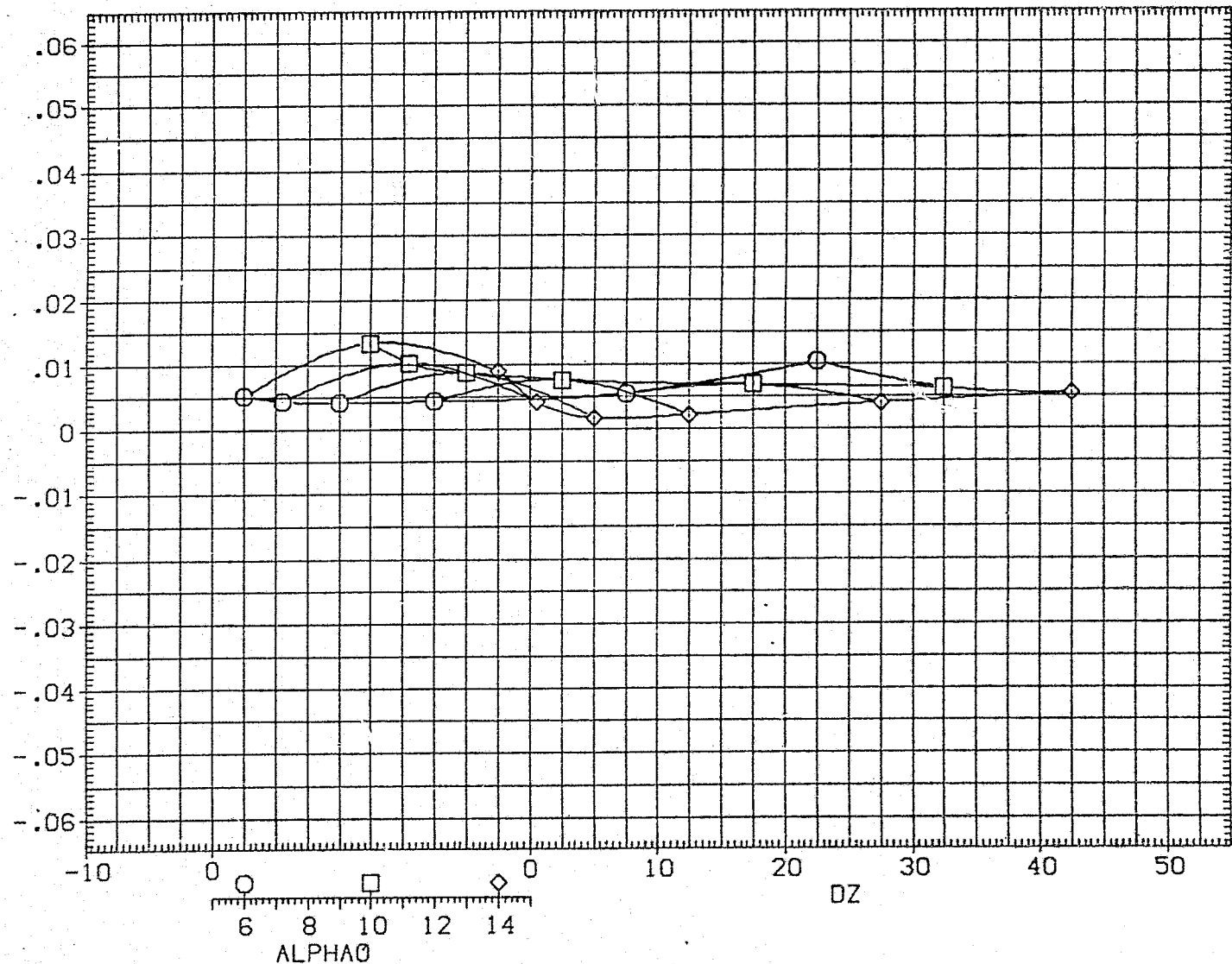


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (053 - 010) (7GN053)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

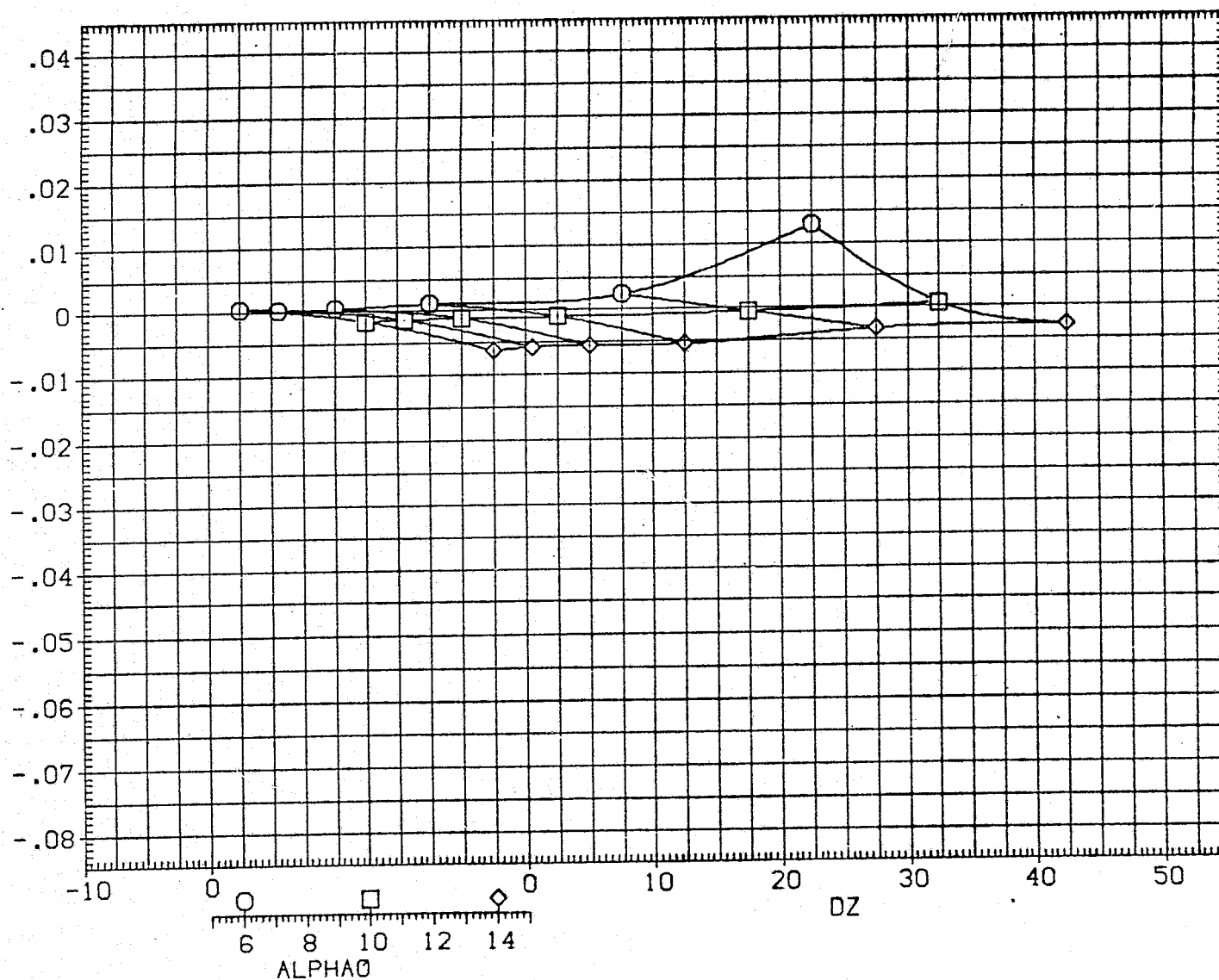


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.8800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

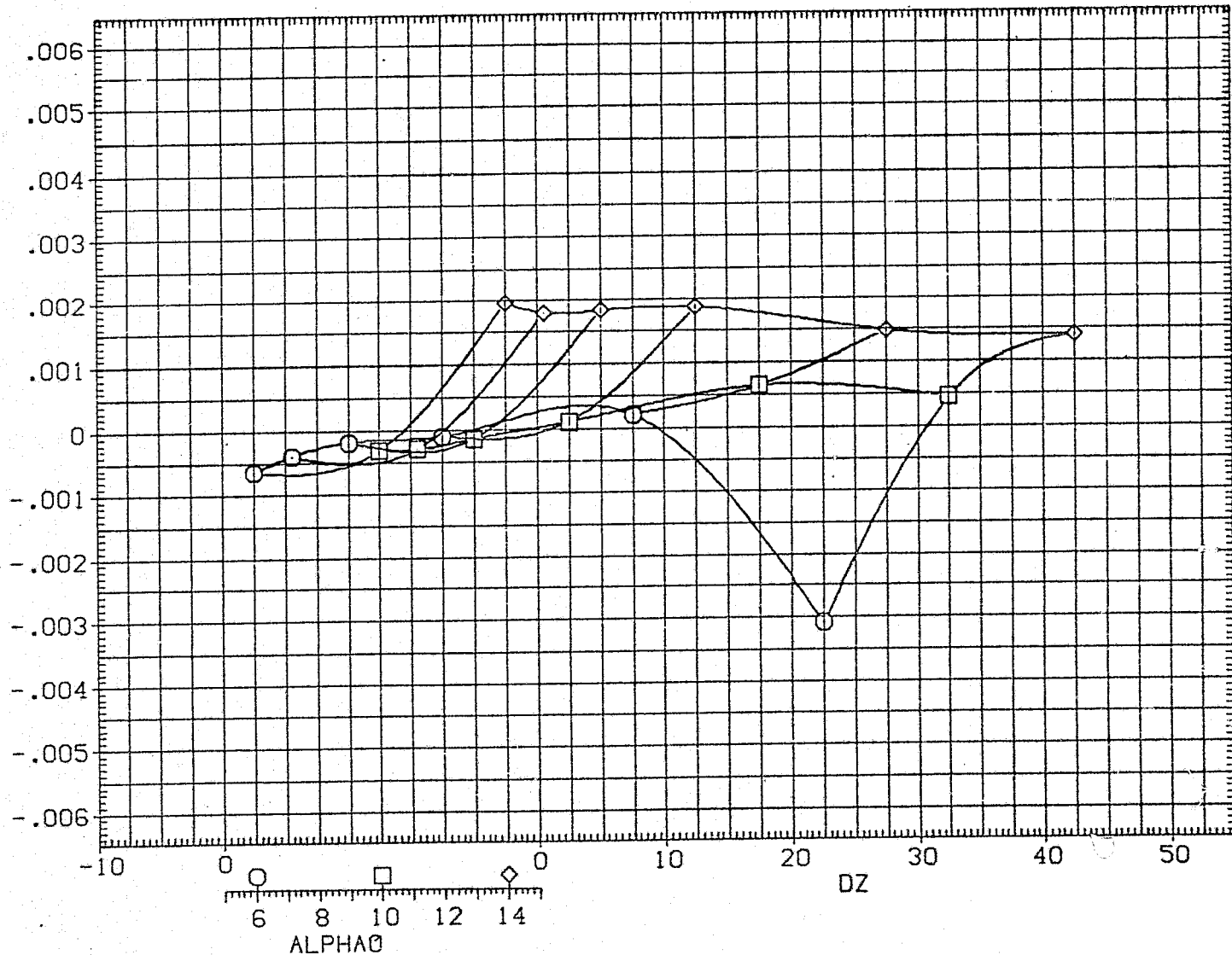


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (053 - 010)(76N053)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

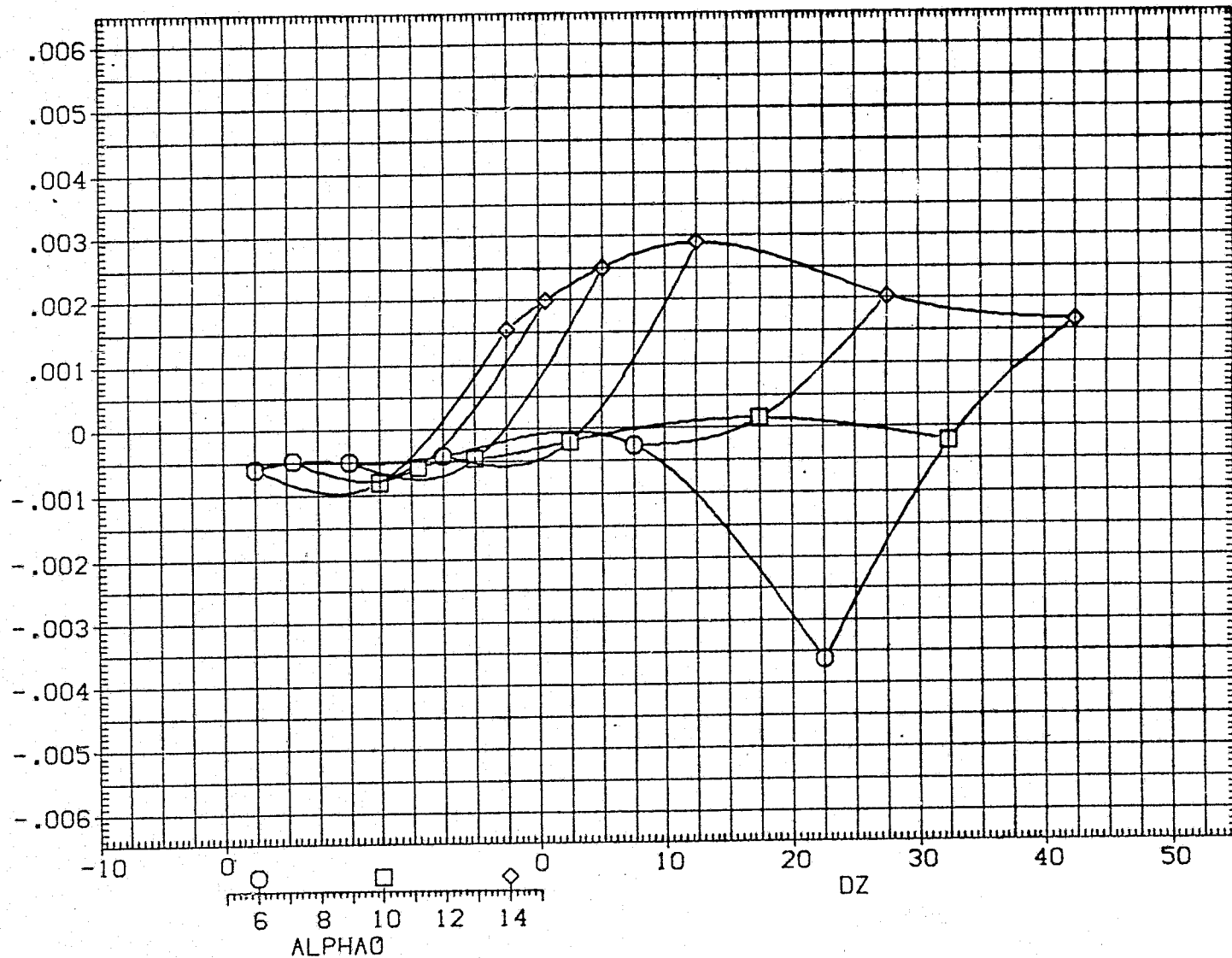


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

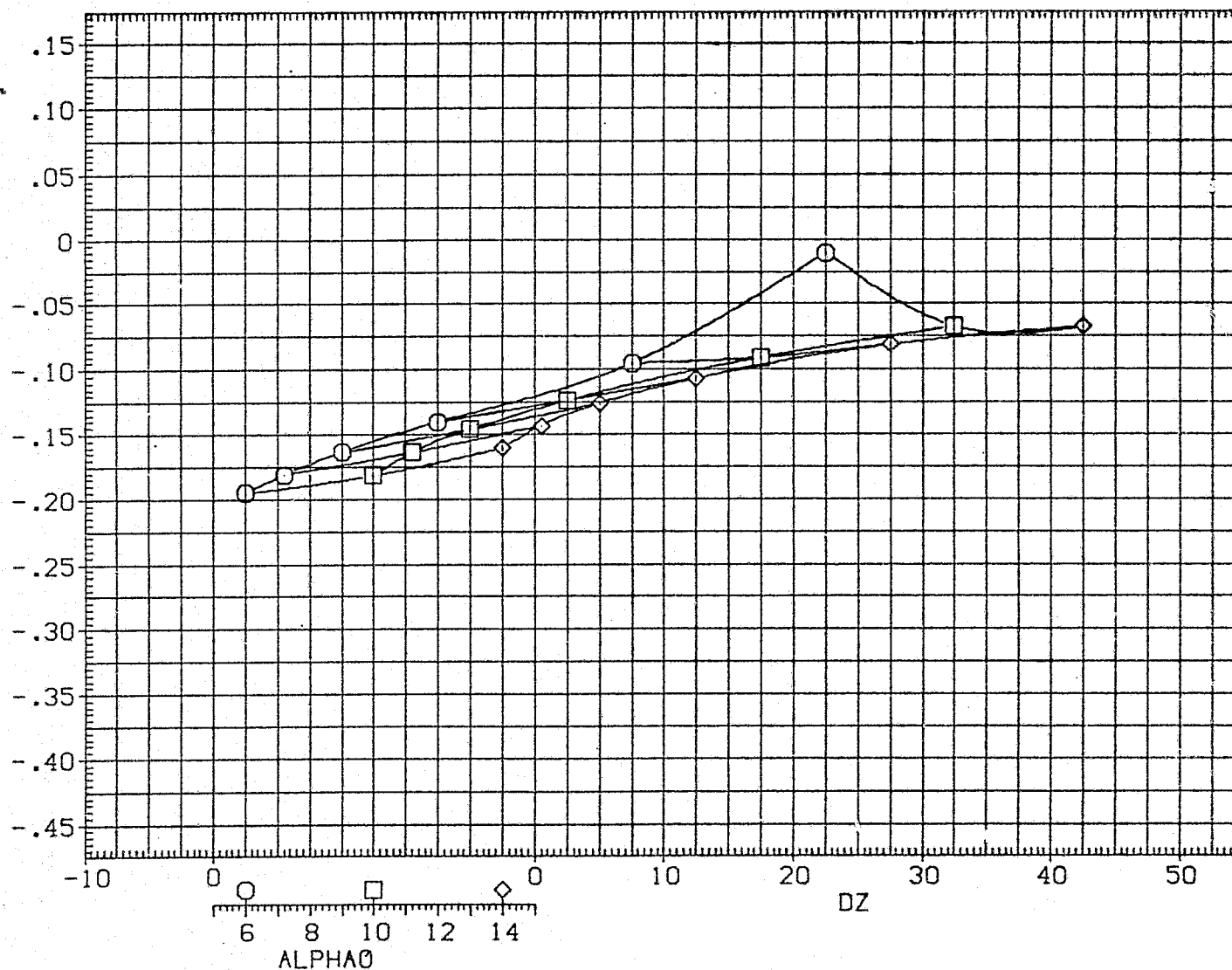


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (053 - 010)(7GN053)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	OX	10.000
OY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

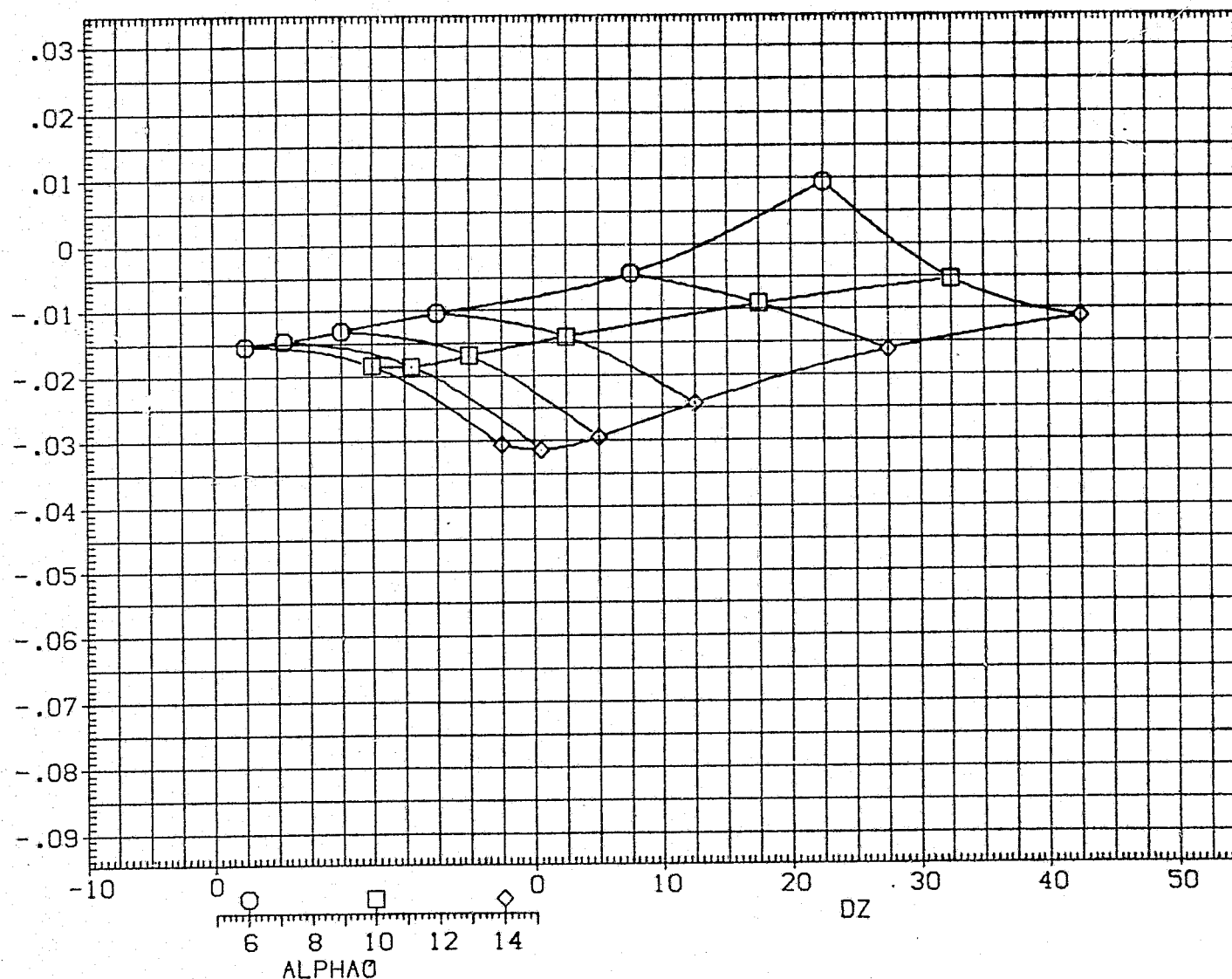


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

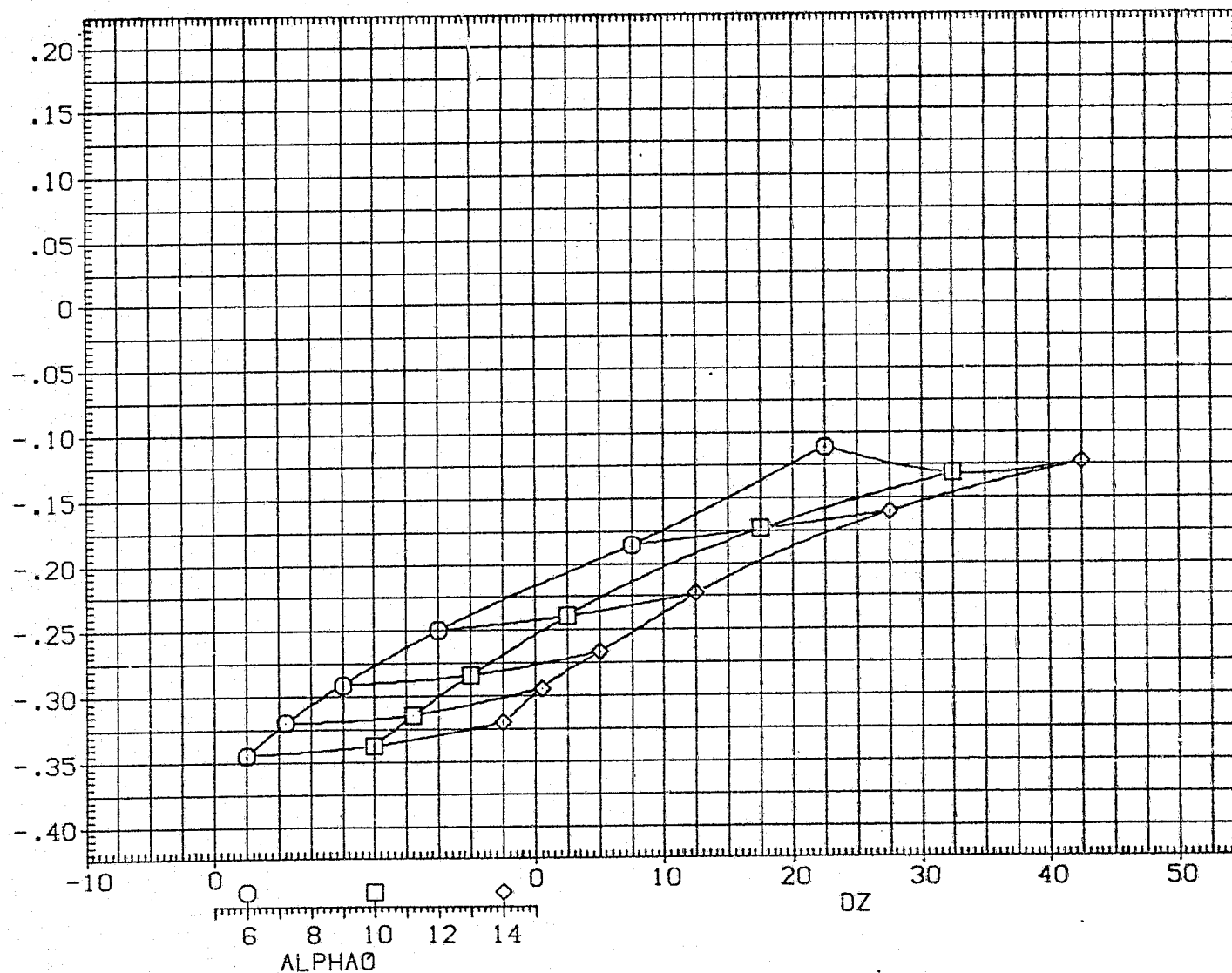


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (056 - 010)(7GN056)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

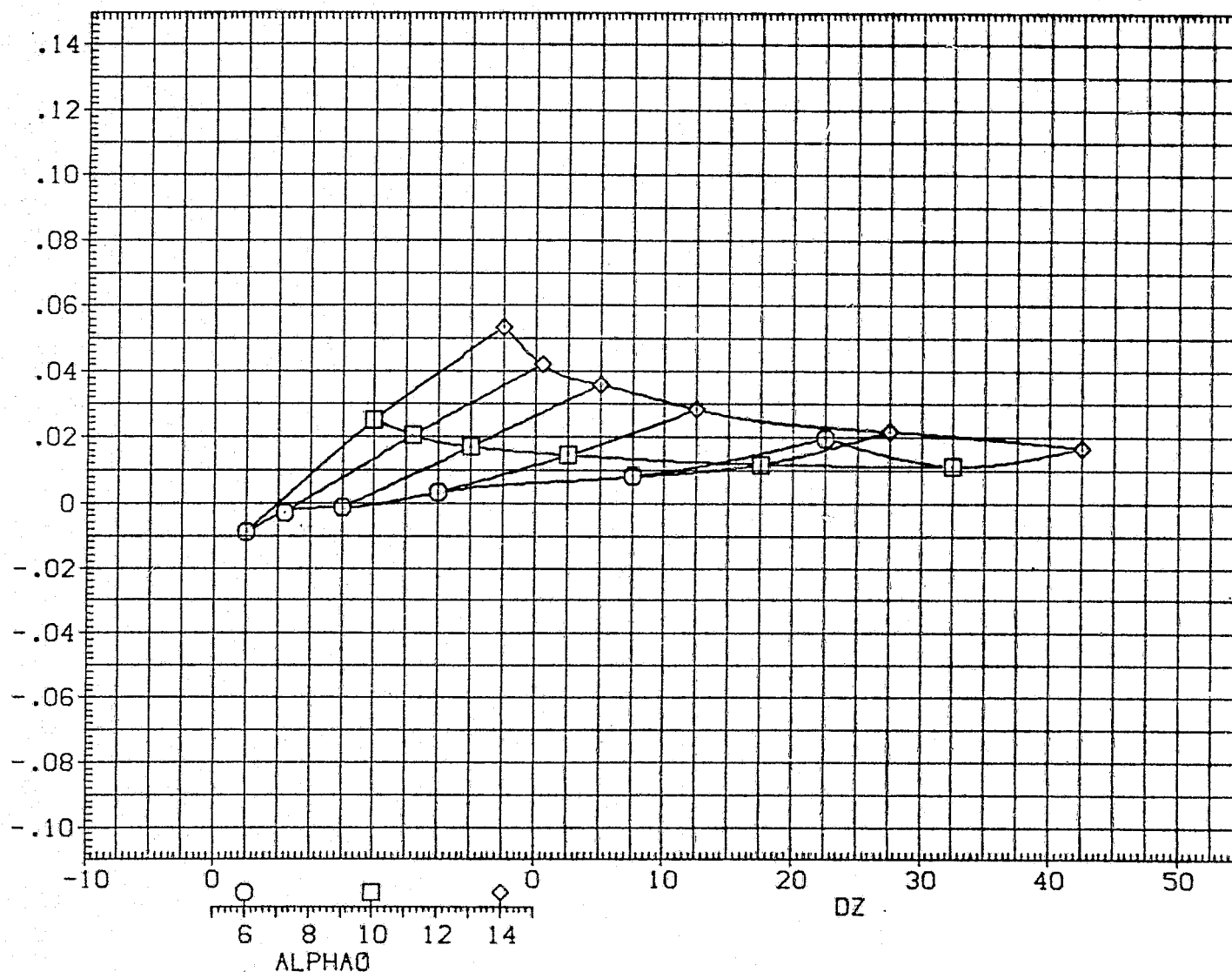


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

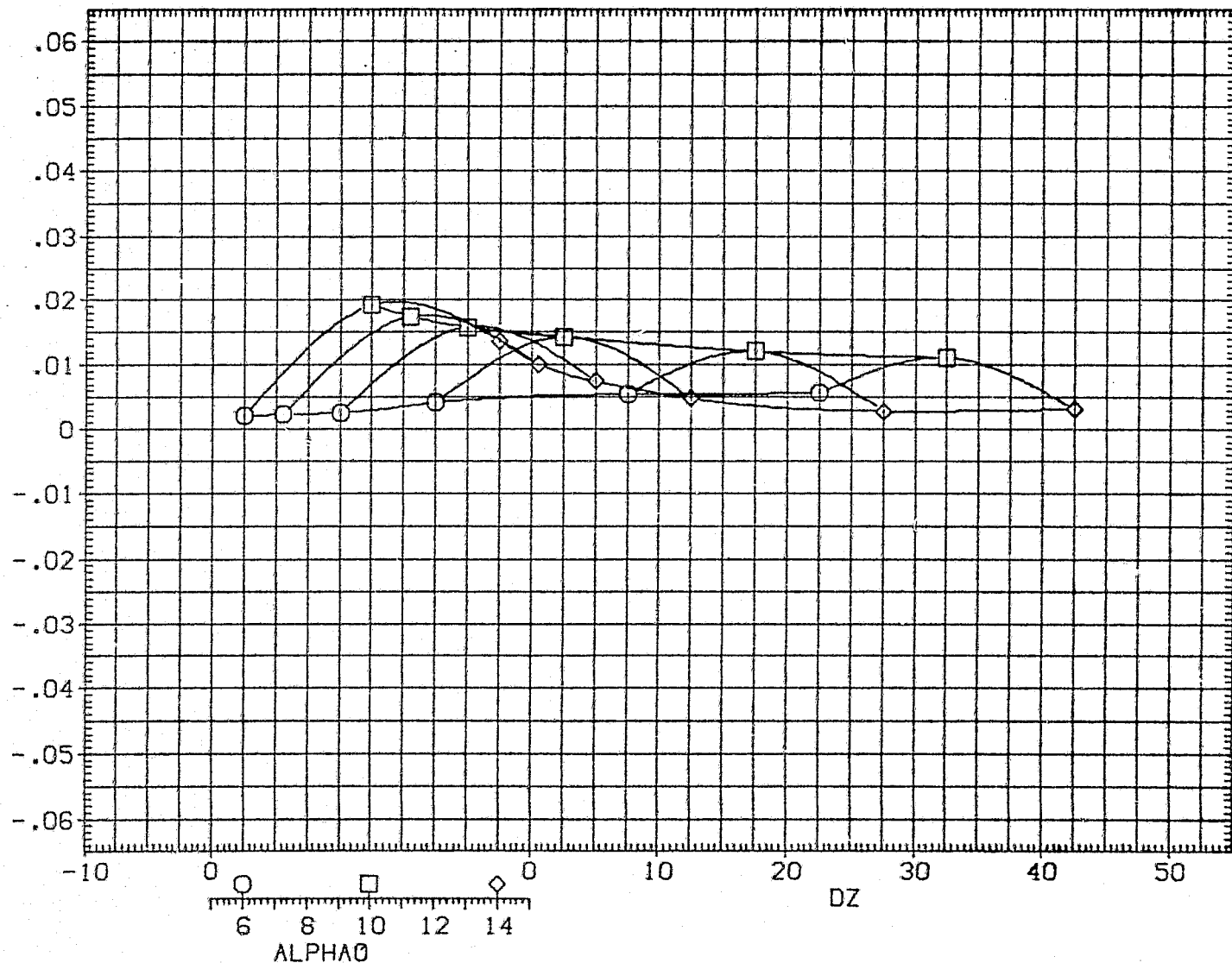


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (056 - 010) (76N056)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

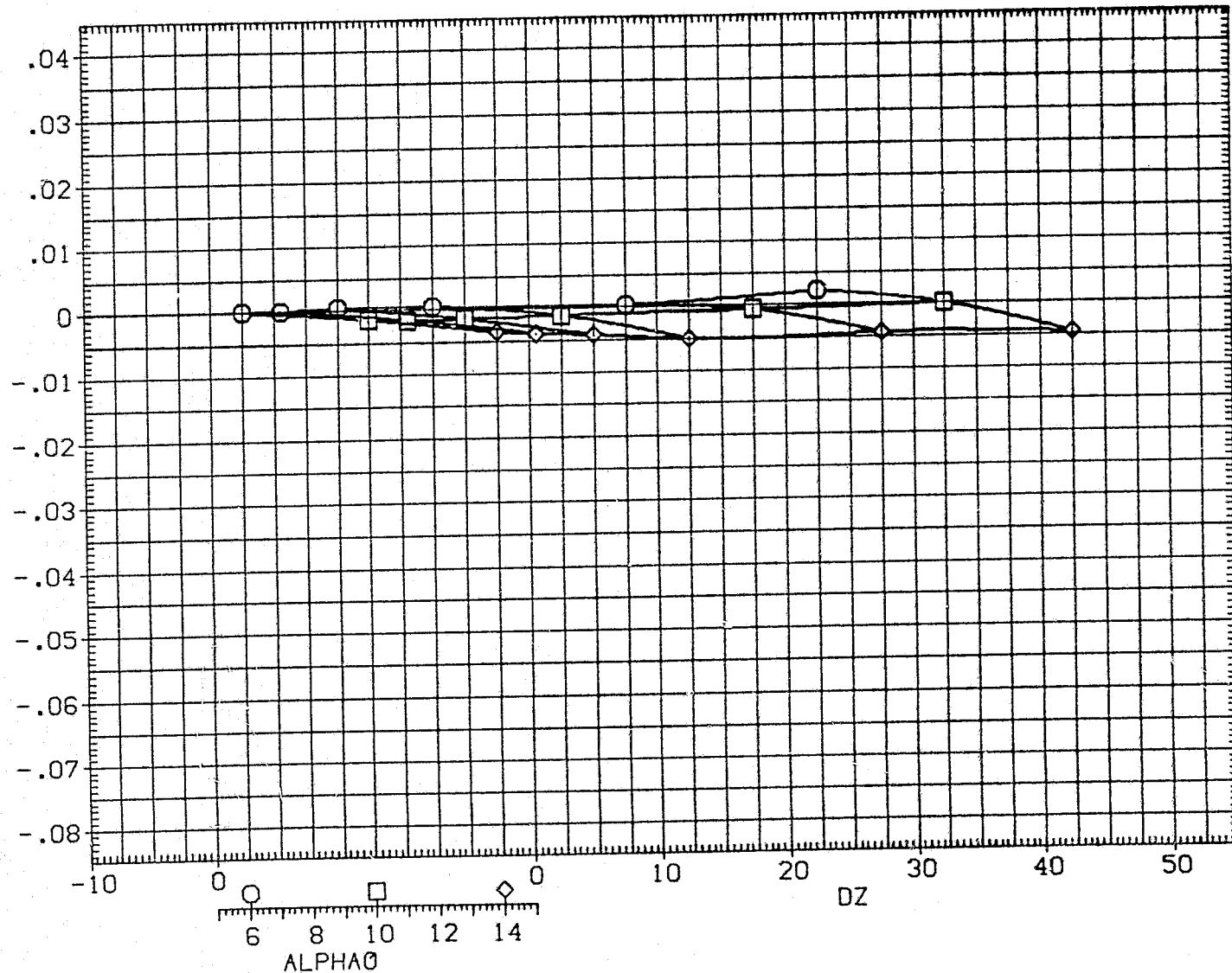


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

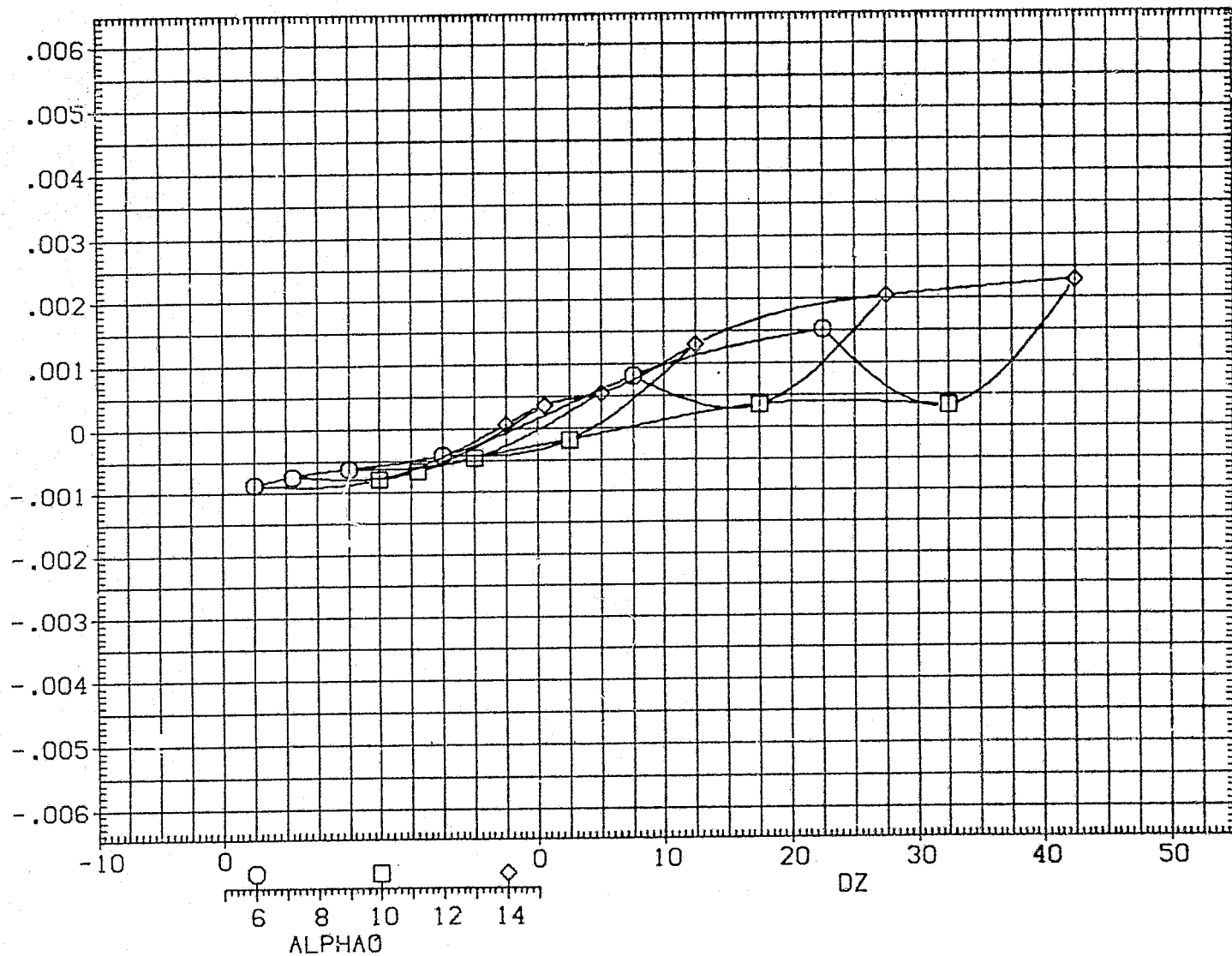


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (056 - 010)(76N056)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

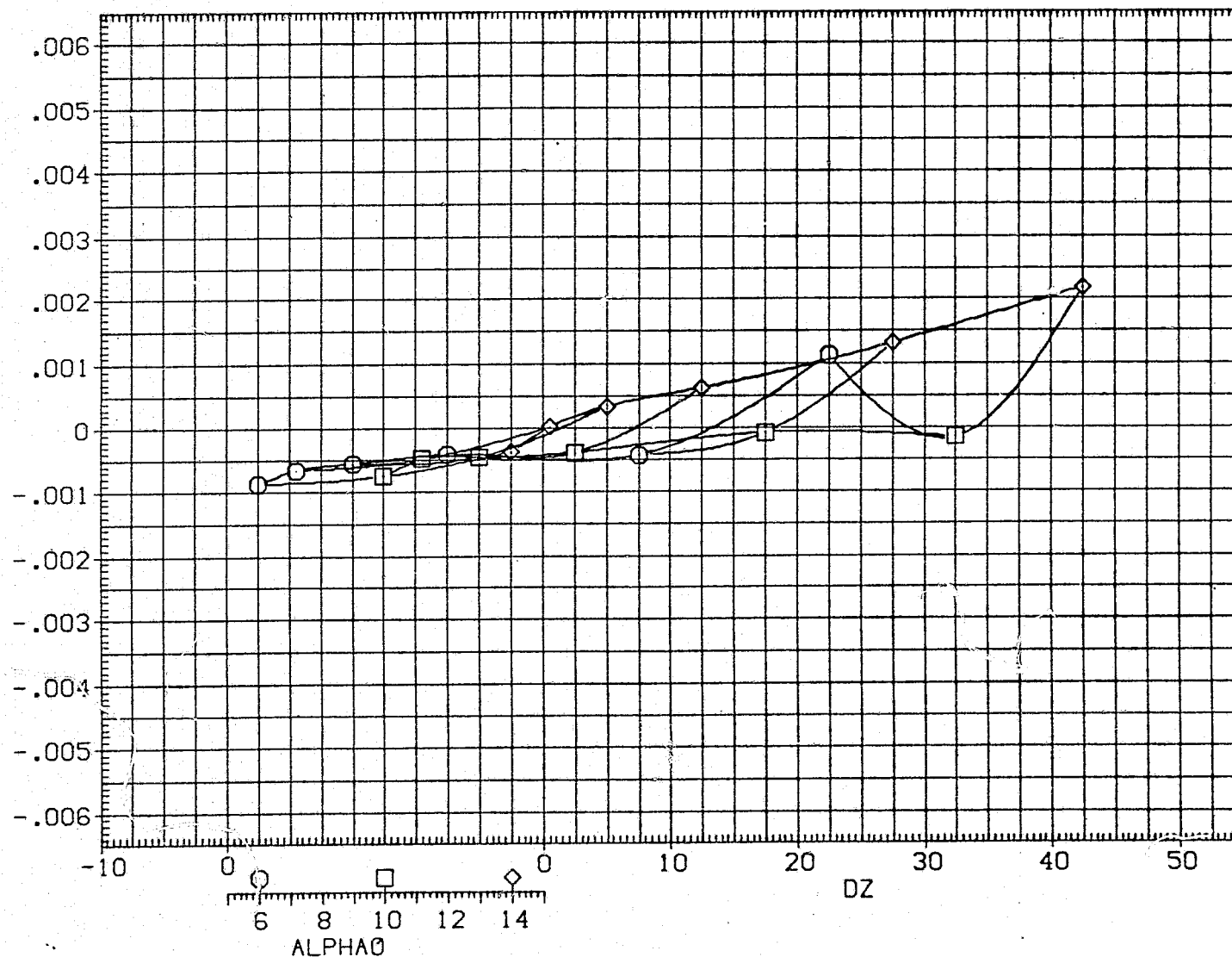


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

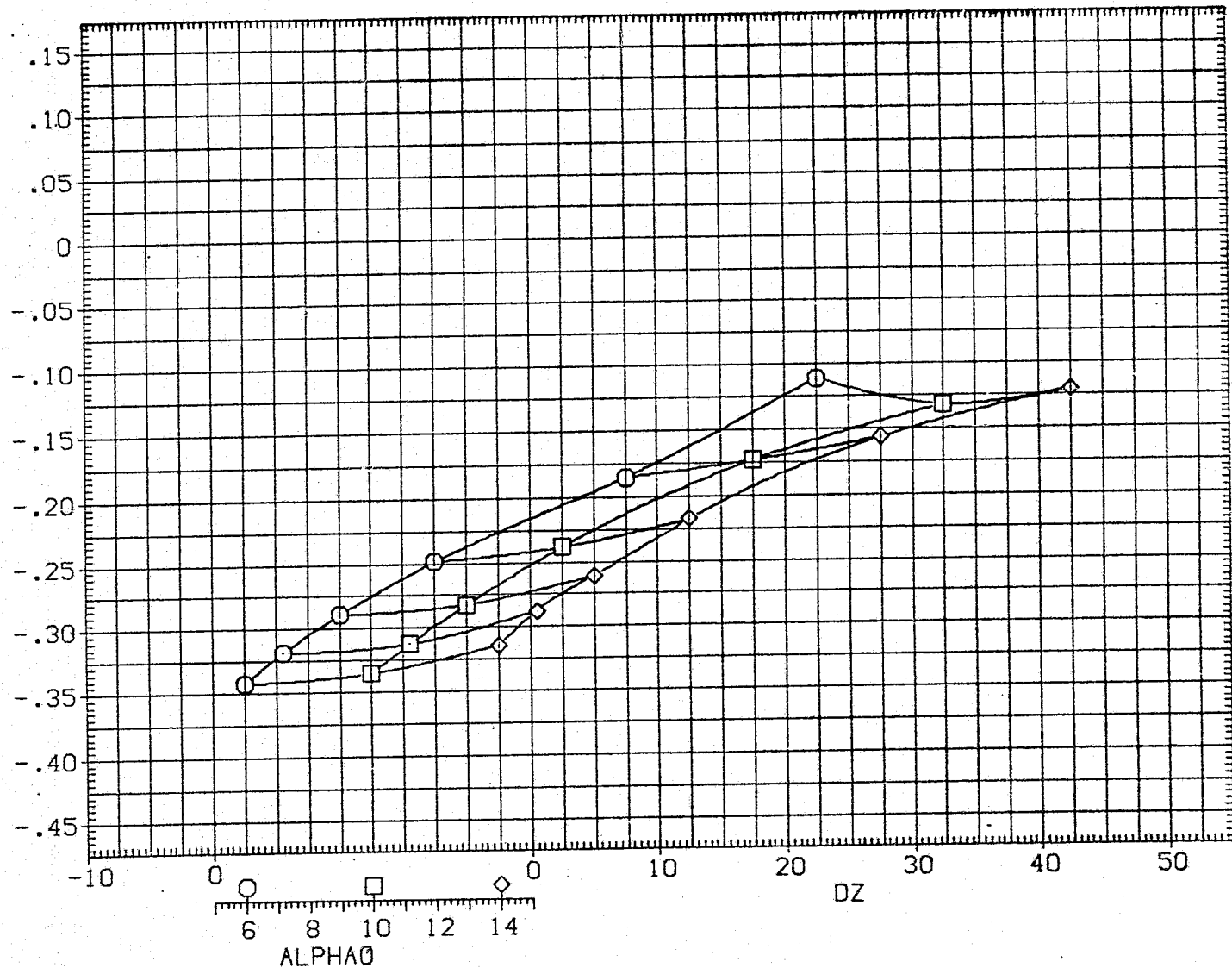


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (056 - 010)(76N056)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	10.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

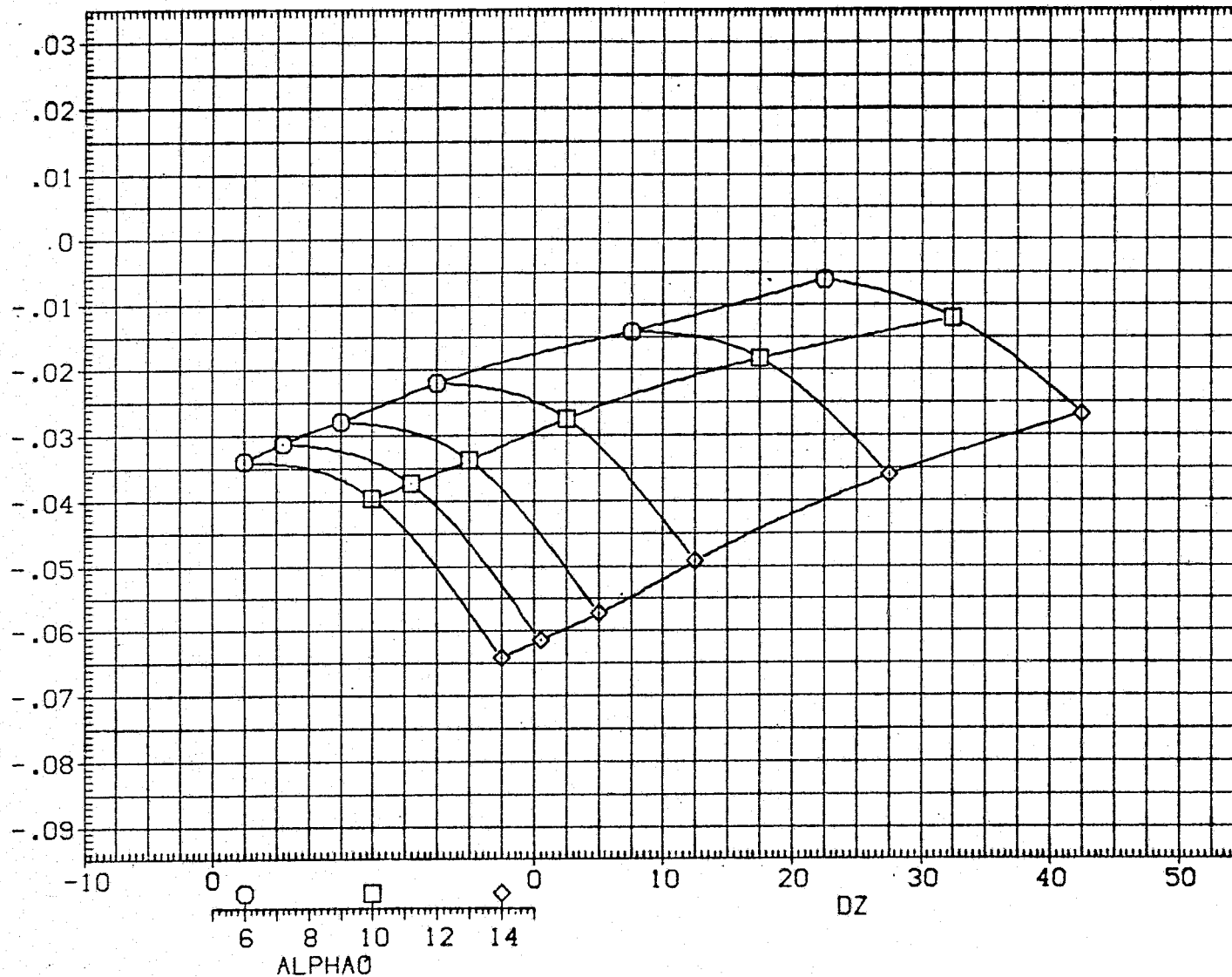


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA ²	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

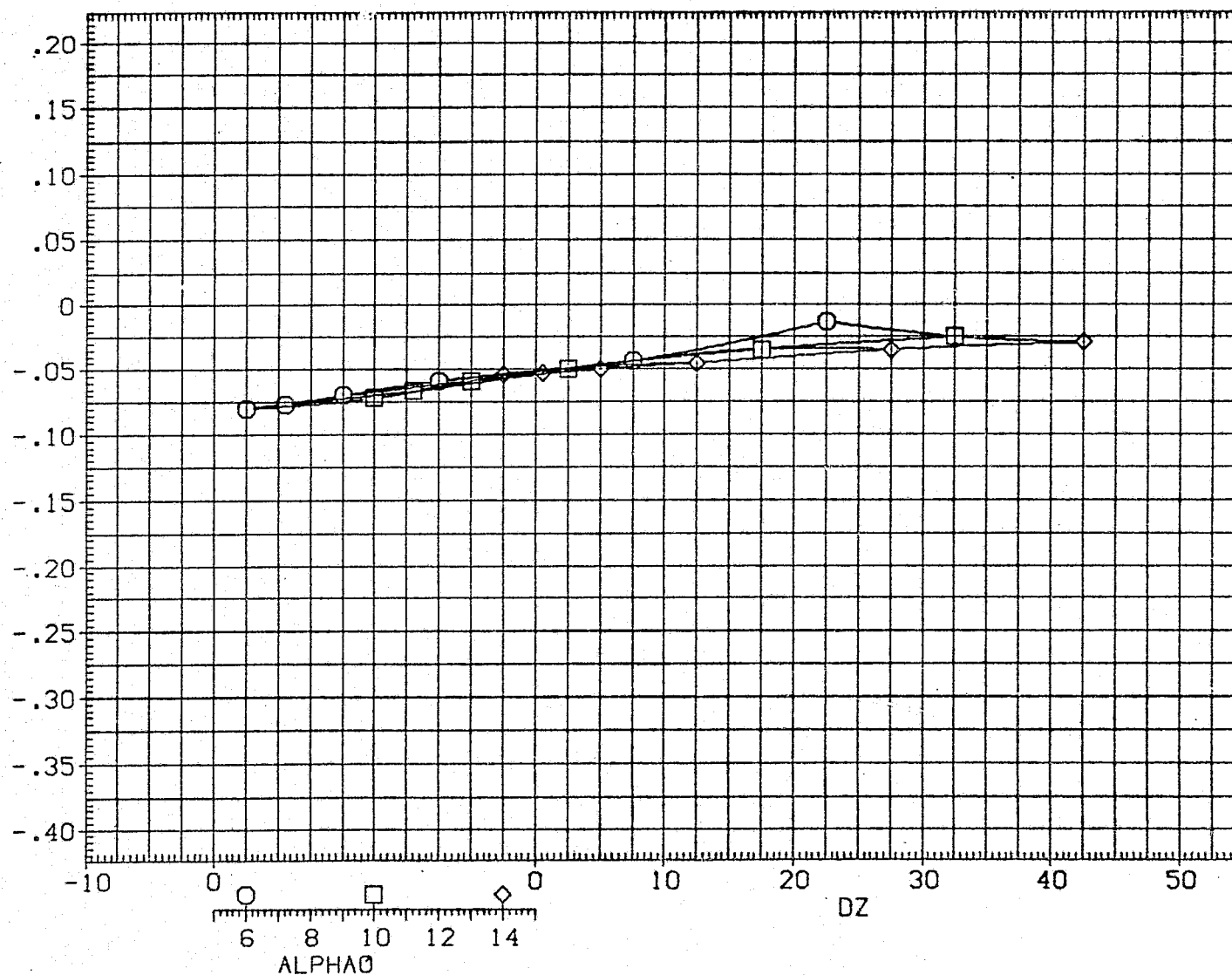


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (051 - 010)(76N051)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

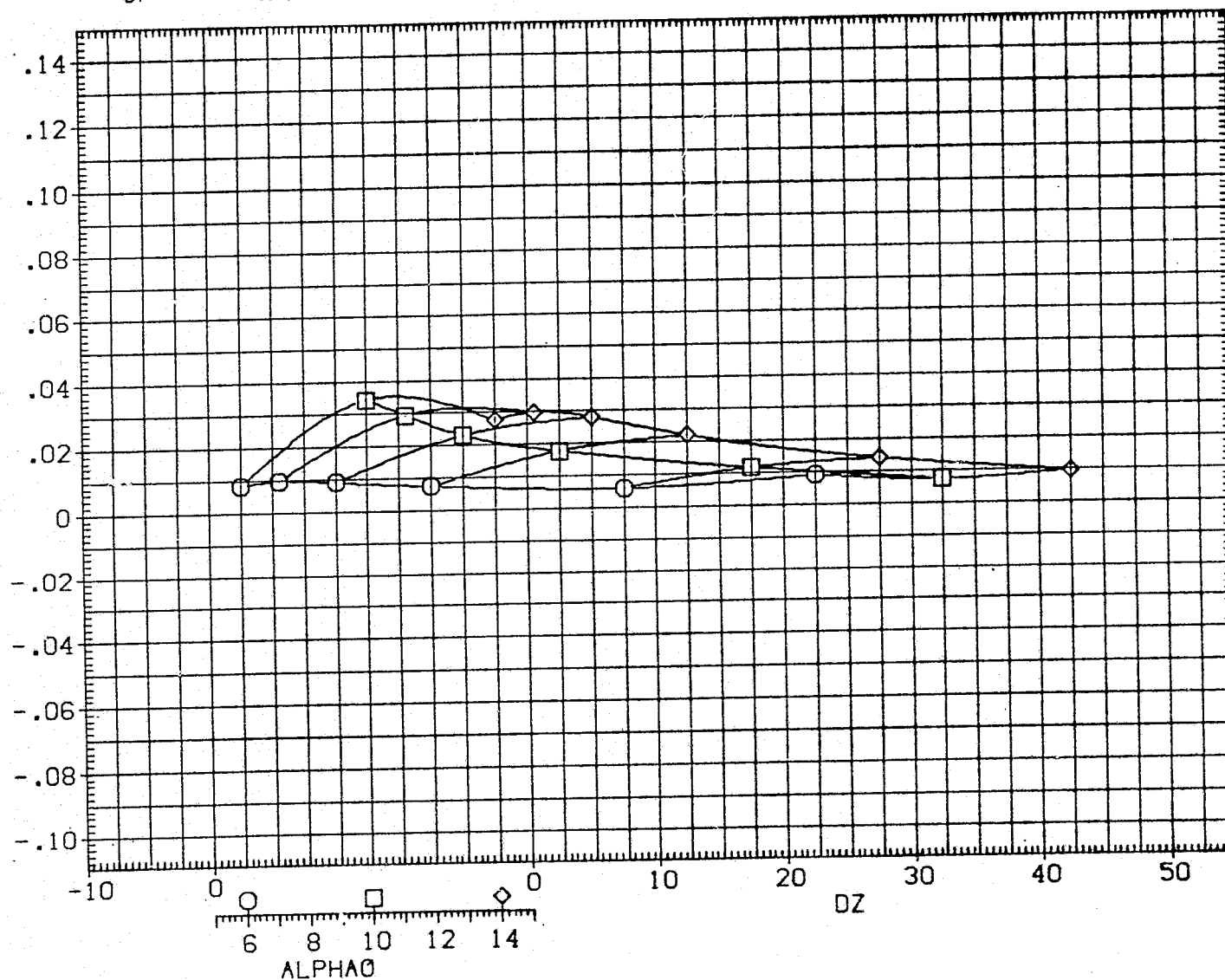


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (051 - 010)(7GN051)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
YMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

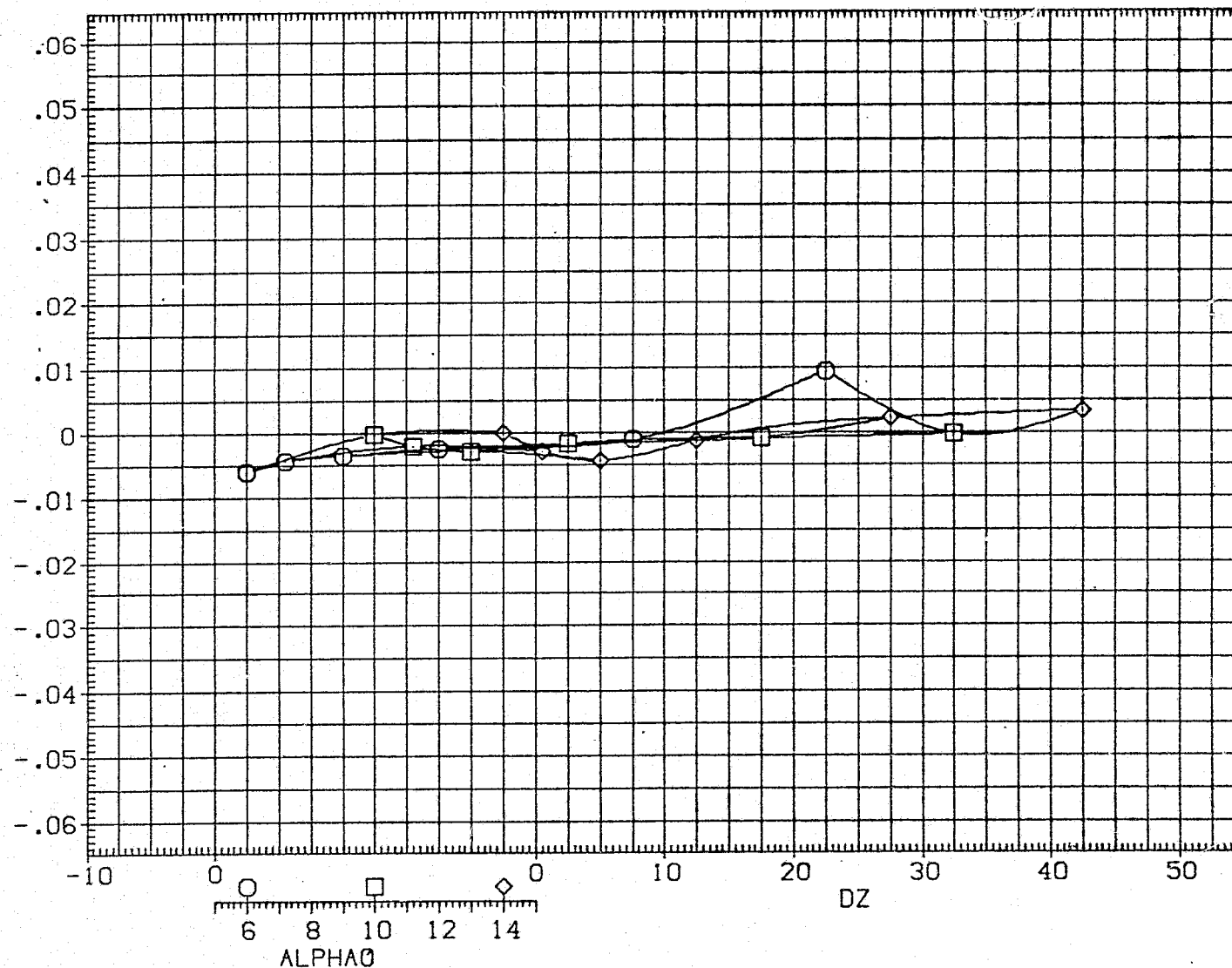


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (051 - 010)(76N051)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

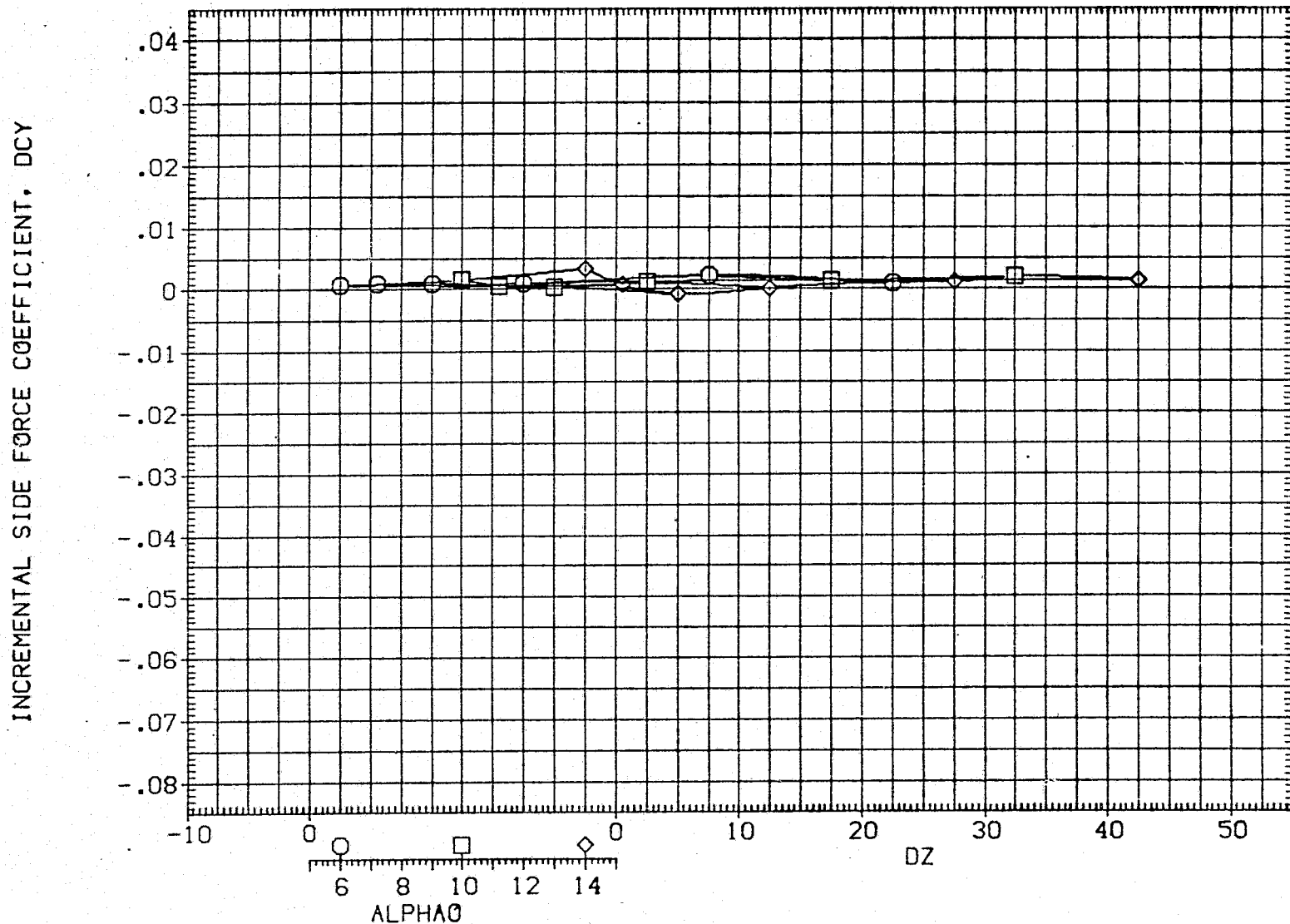


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

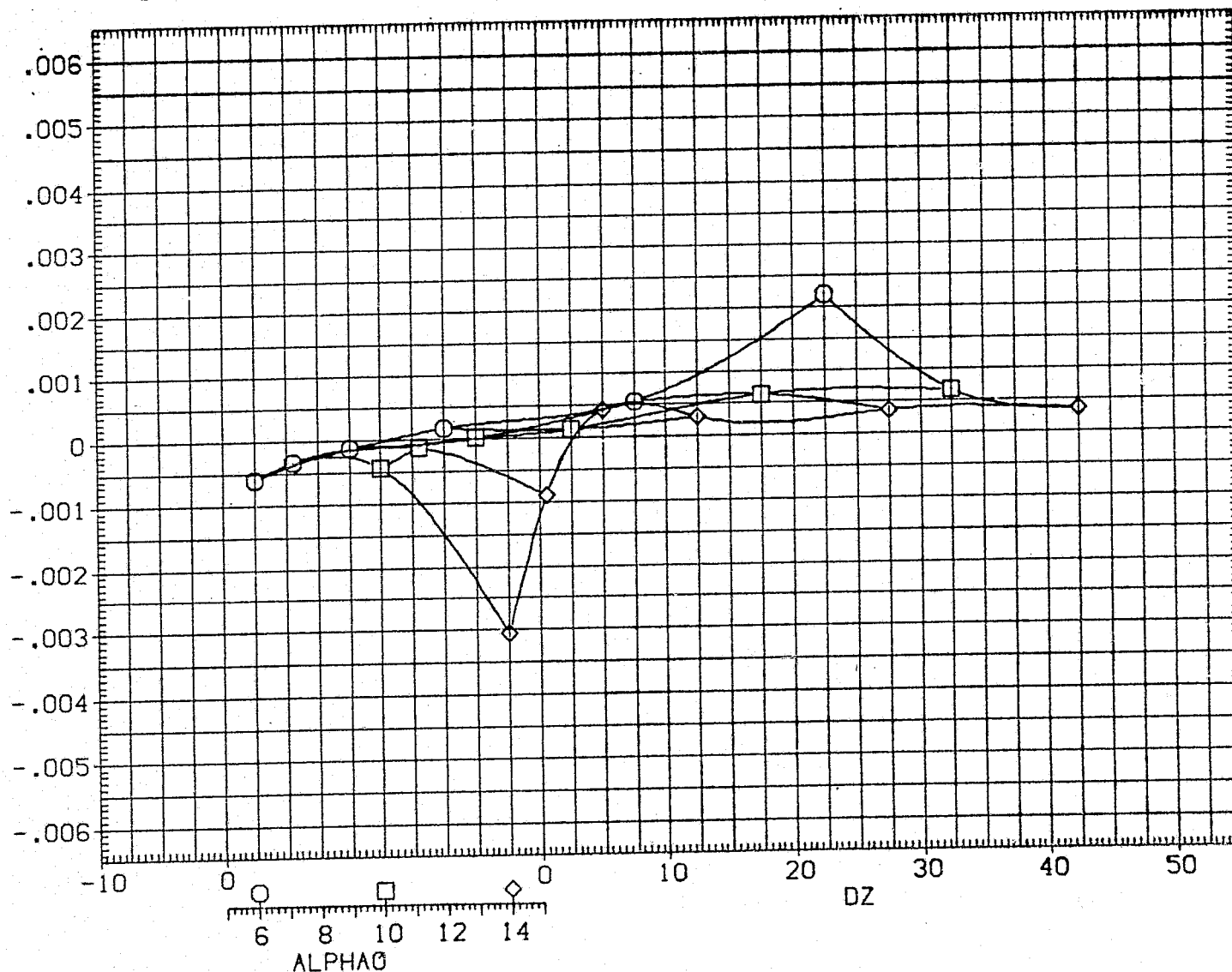


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC = 0)

CA20 (747/1 01 S1) - (01 S1) D/S (051 - 010) (76N051)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
OY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

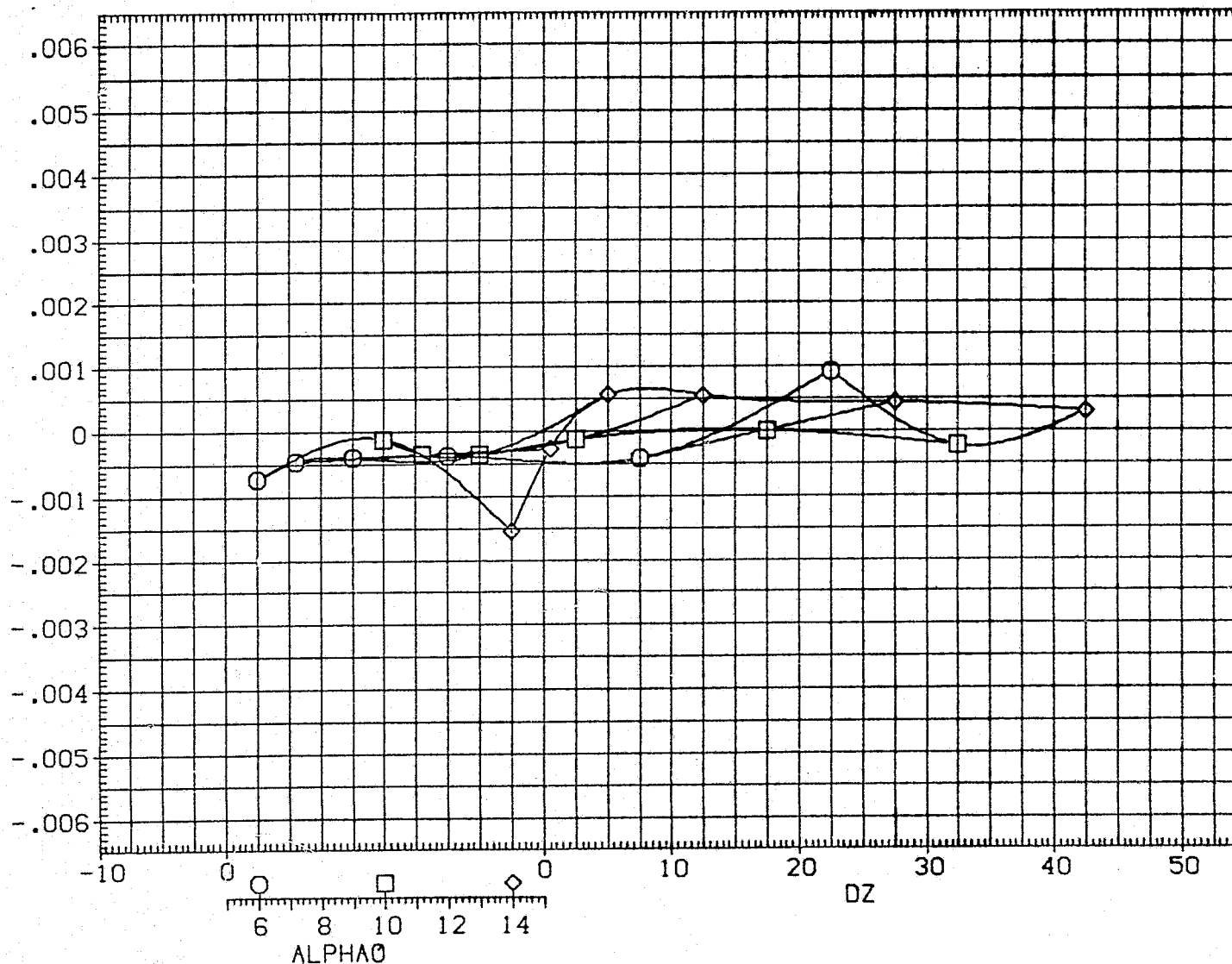


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

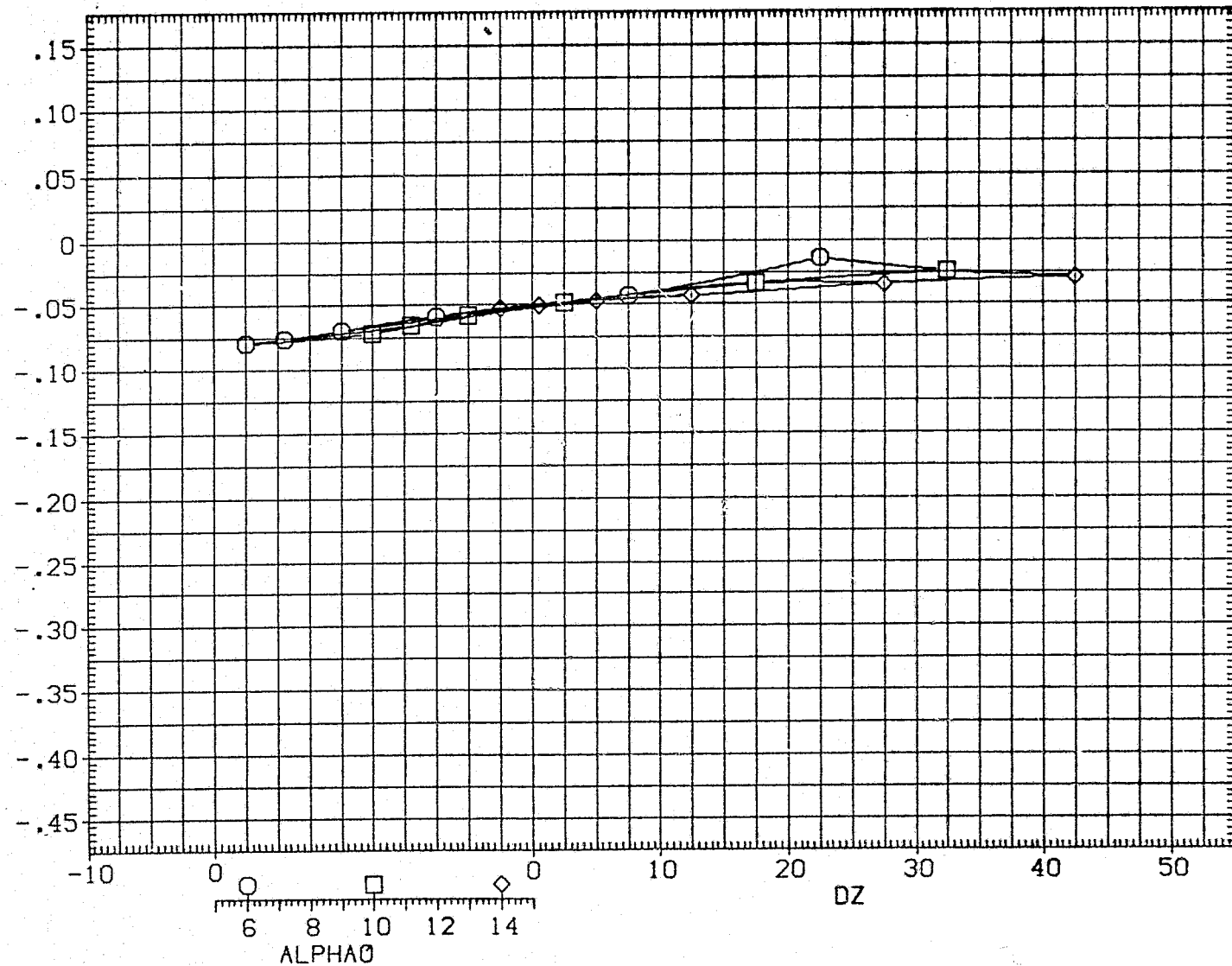


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (051 - 010)(7GN051)

PARAMETRIC VALUES

ALPHAC	.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
IV	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

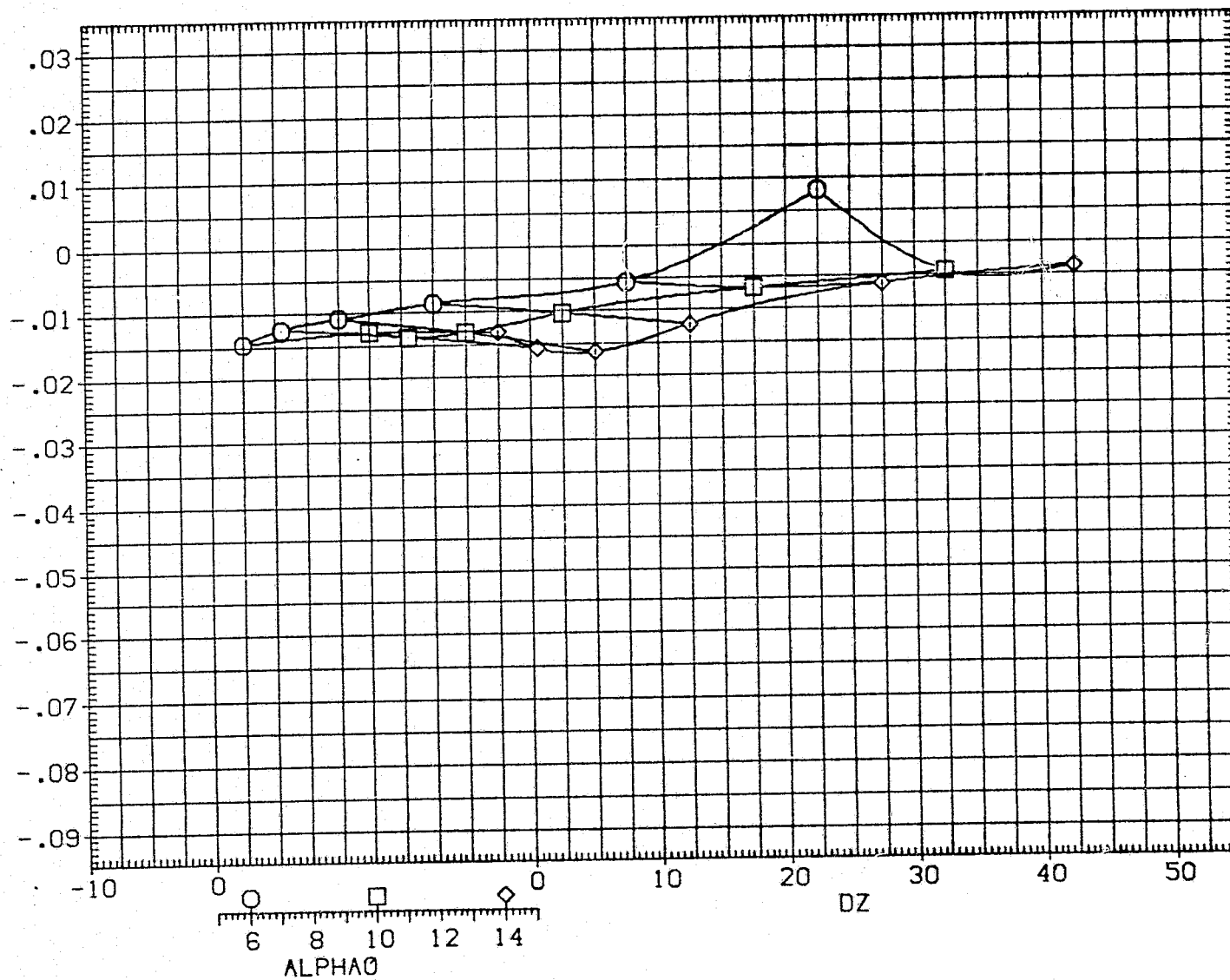


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

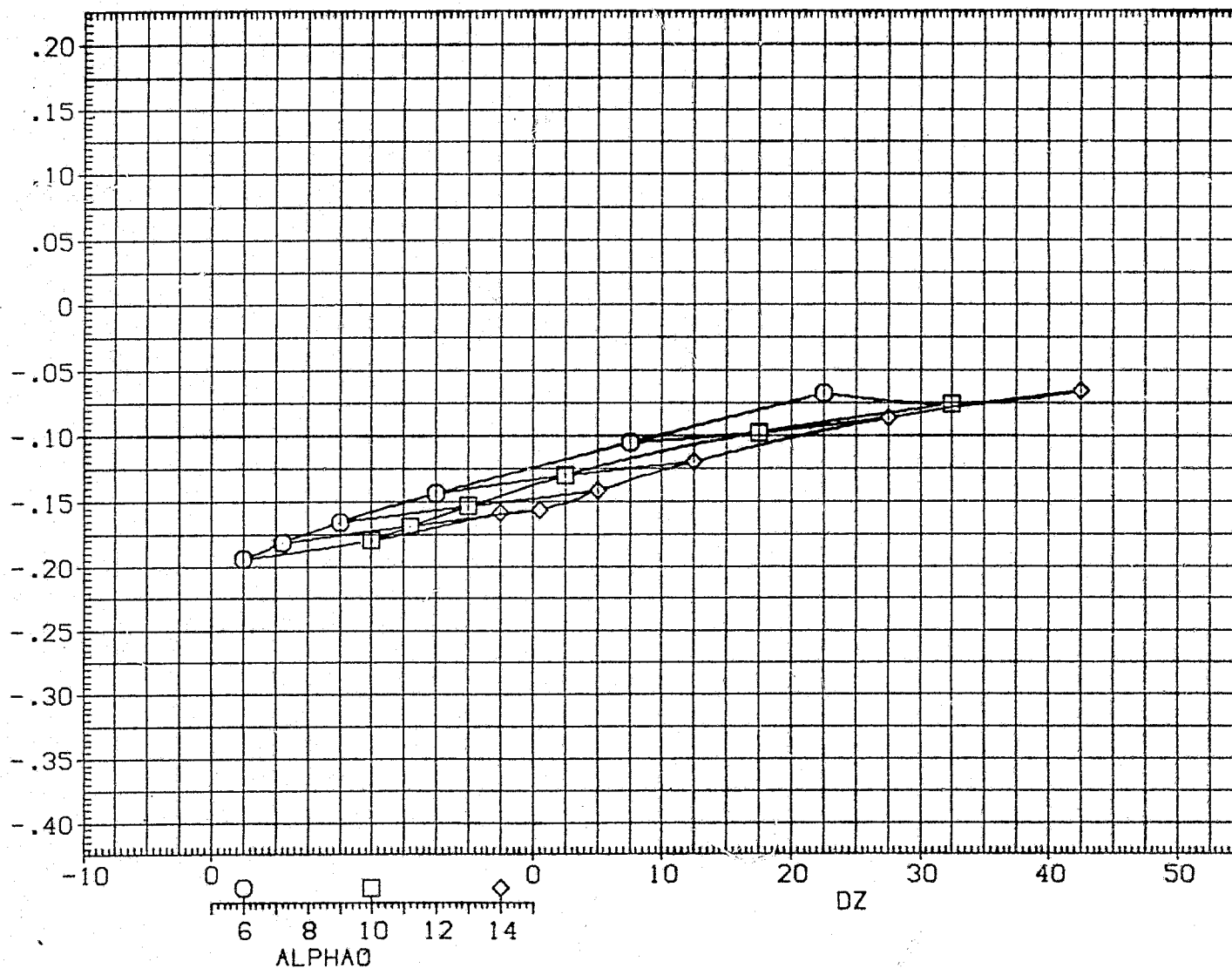


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (054 - 010)(7GN054)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.YO
YMRP	.0000	IN.YO
ZMRP	375.0000	IN.ZO
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

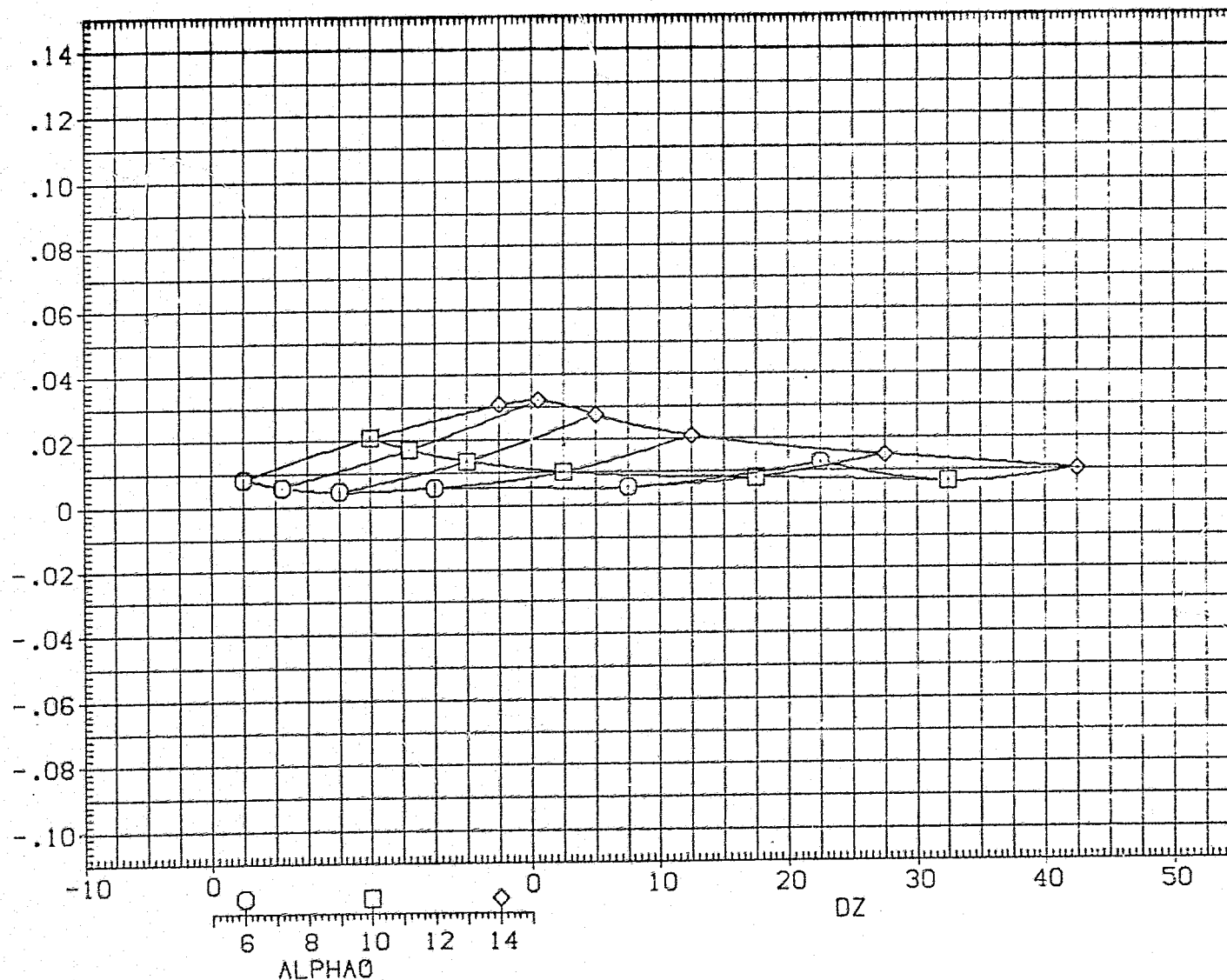


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-18	.000	ELV-08	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

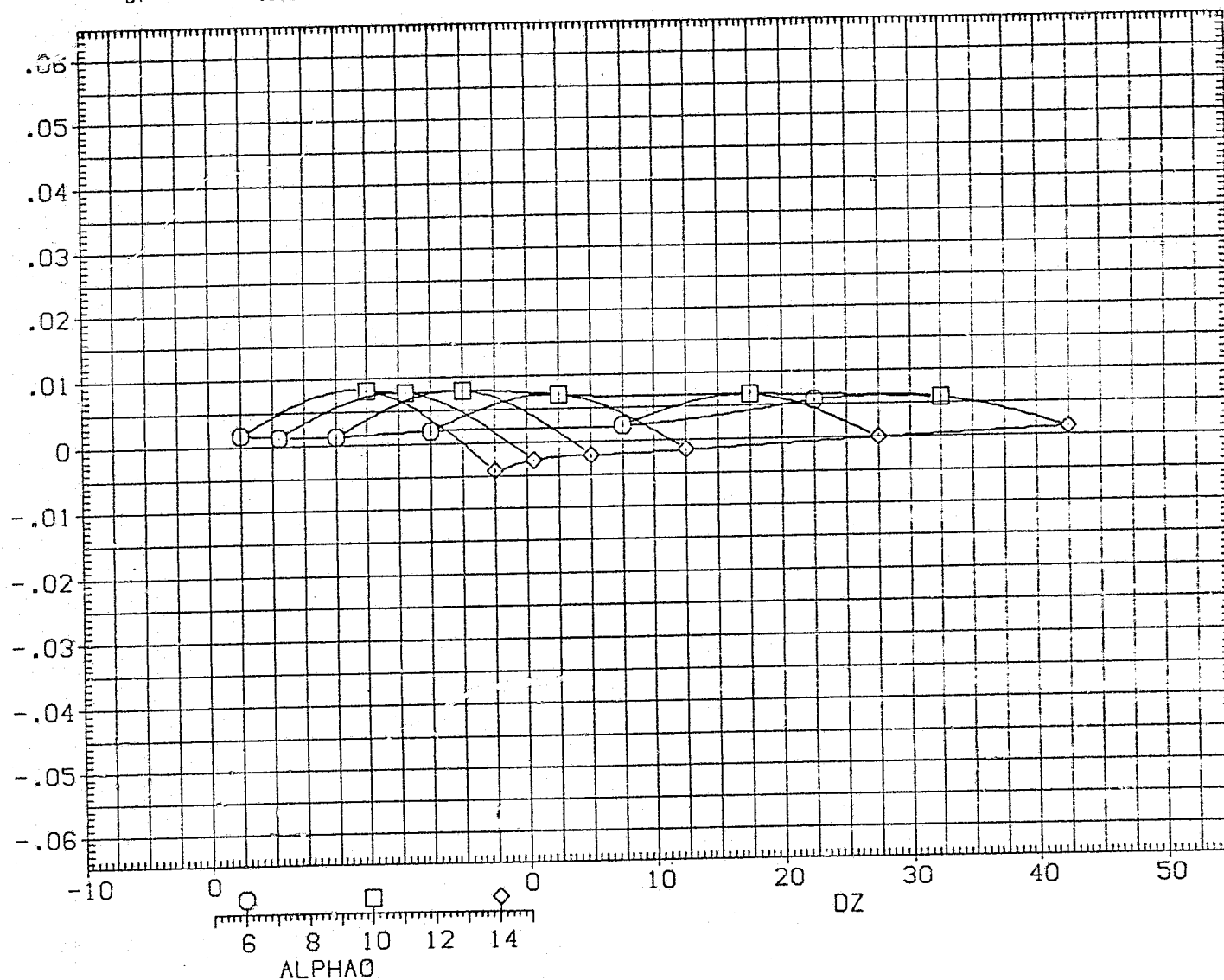


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (054 - 010)(7GN054)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

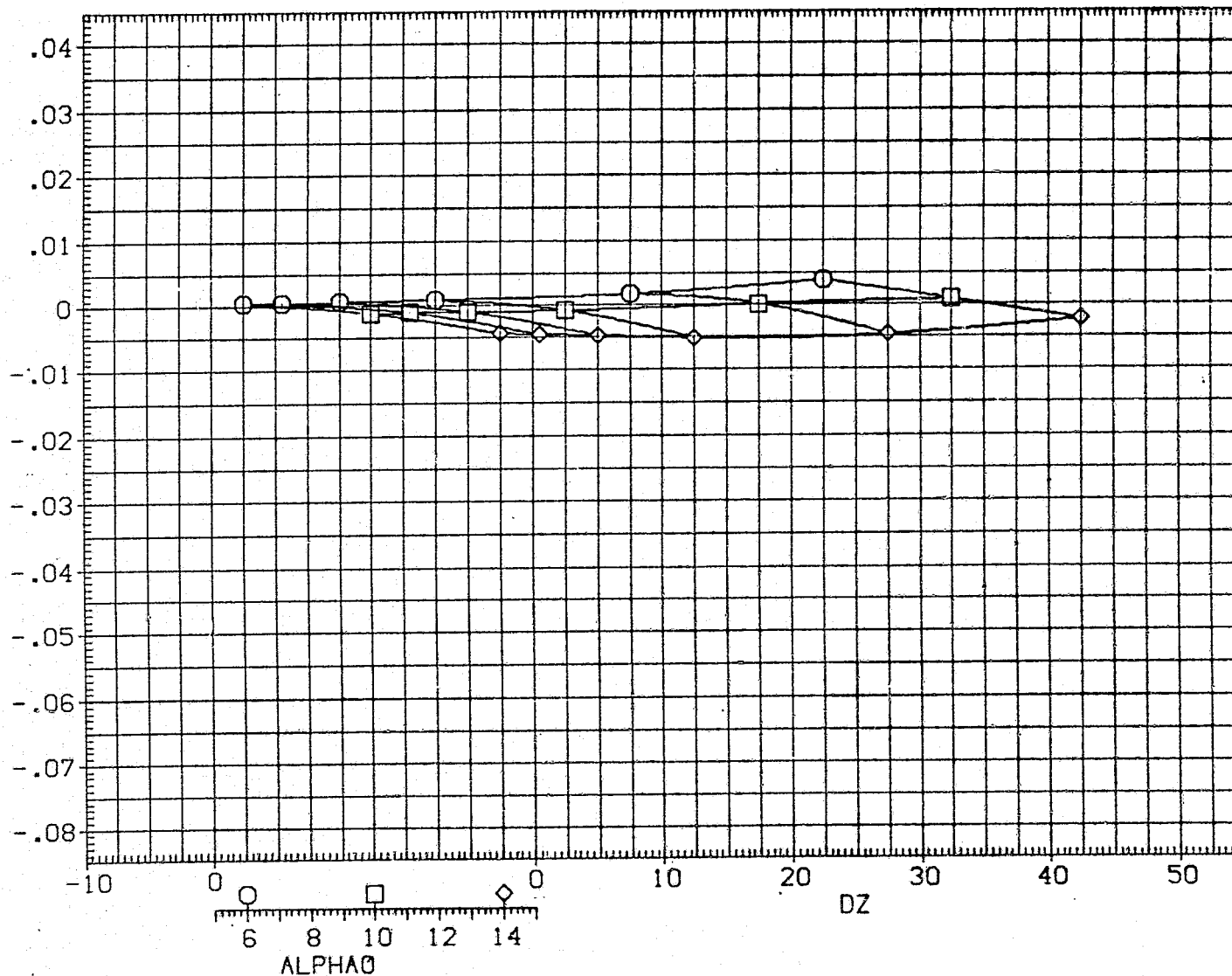


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (054 - 010) (76N054)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN, (BODY AXIS)

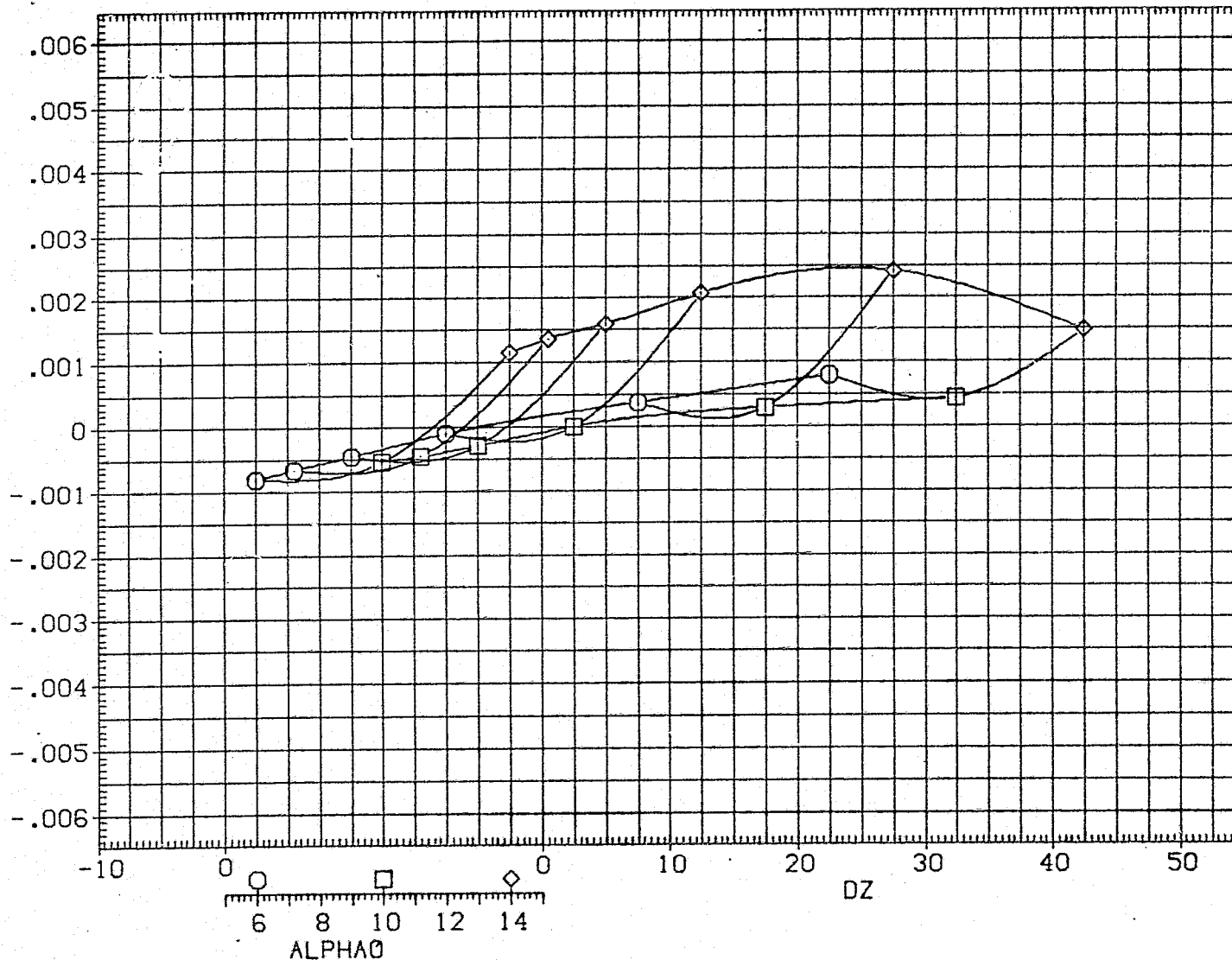


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (054 - 010)(76N054)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

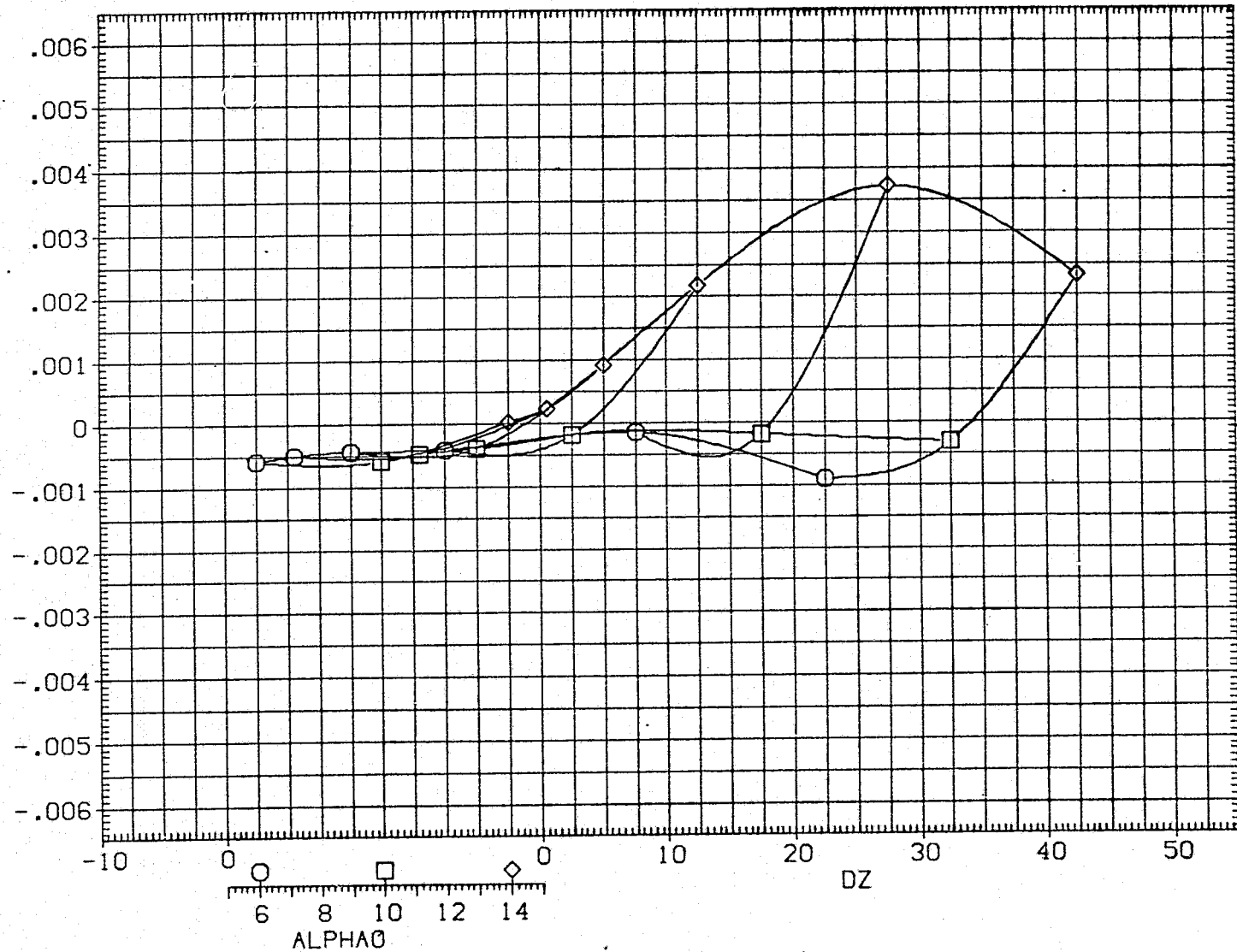


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

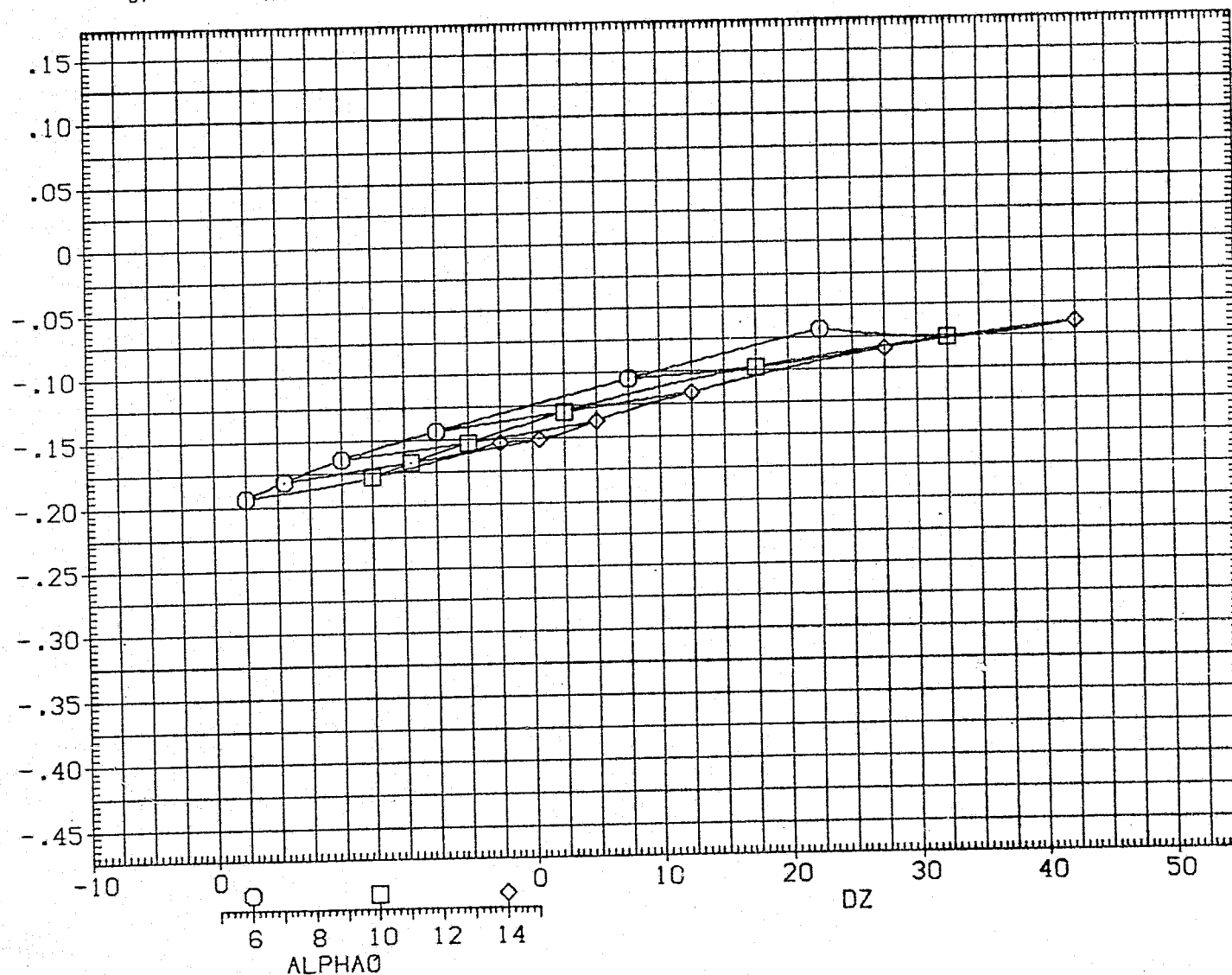


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (054 - 010)(76N054)

PARAMETRIC VALUES

ALPHAC	4.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

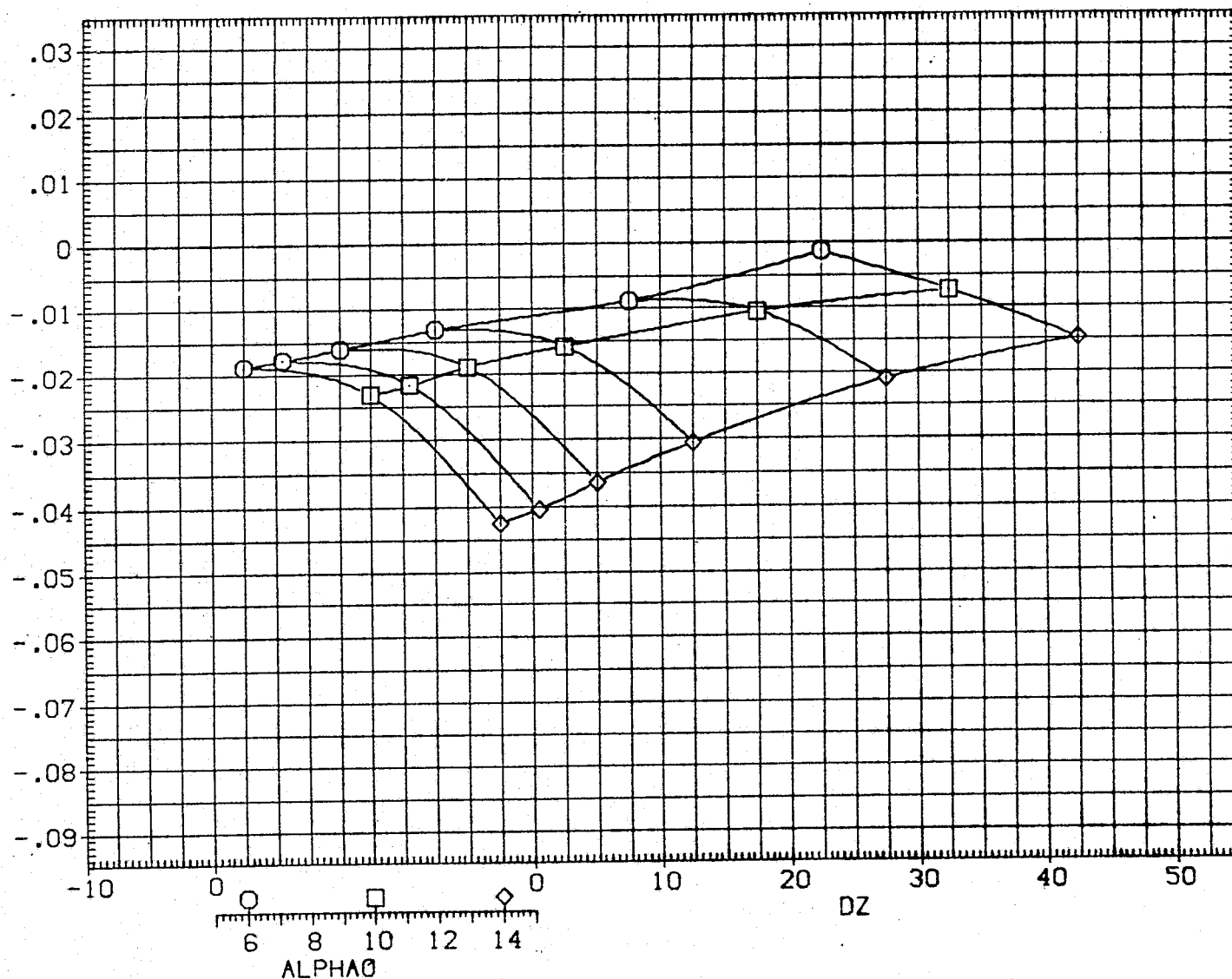


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL NORMAL FORCE COEFFICIENT, DCN

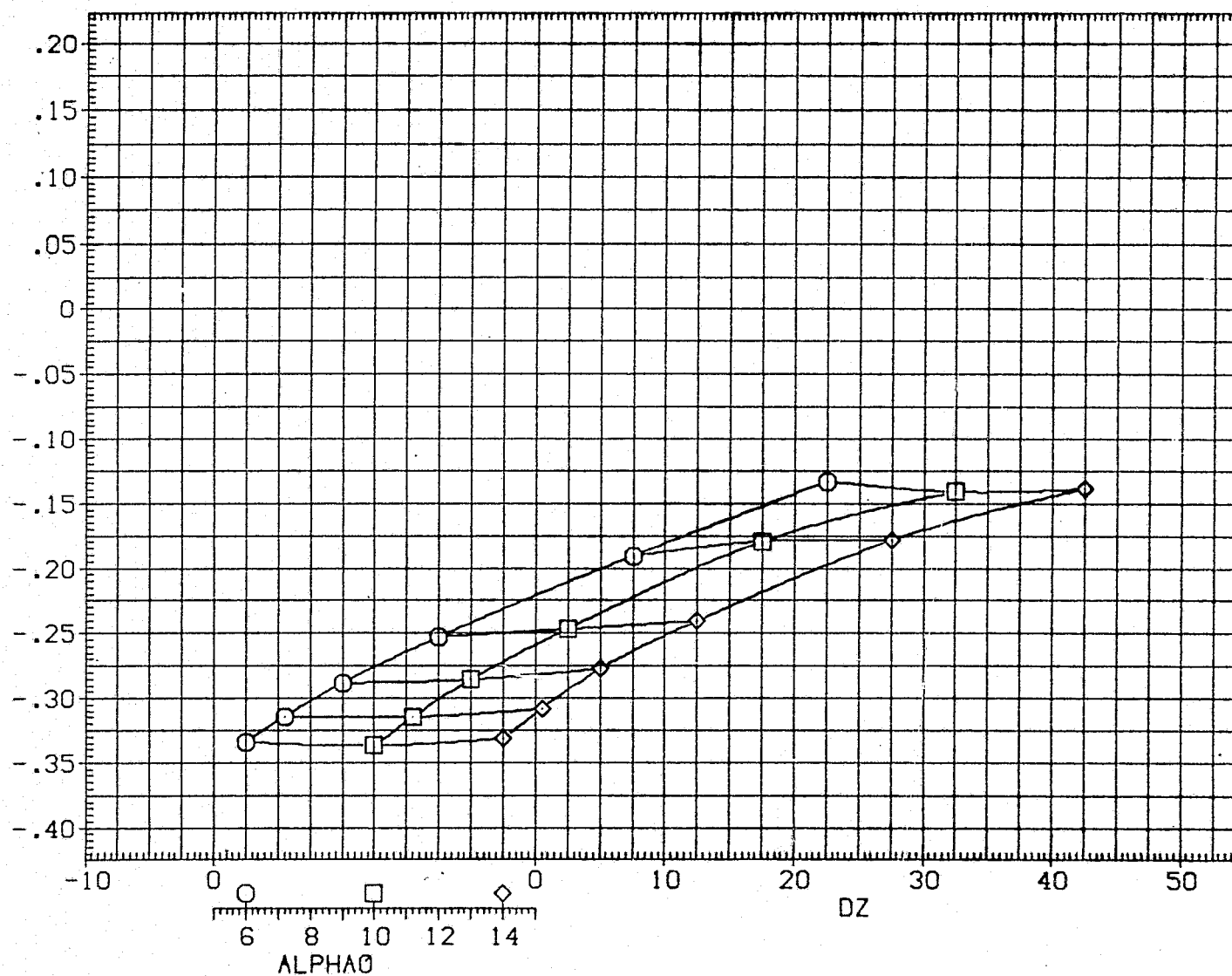


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1)

D/S (057 - 010)(7GN057)

PARAMETRIC VALUES

ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION

SREF	2690.0000	90.FY.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL PITCHING MOMENT COEFFICIENT, DCLM

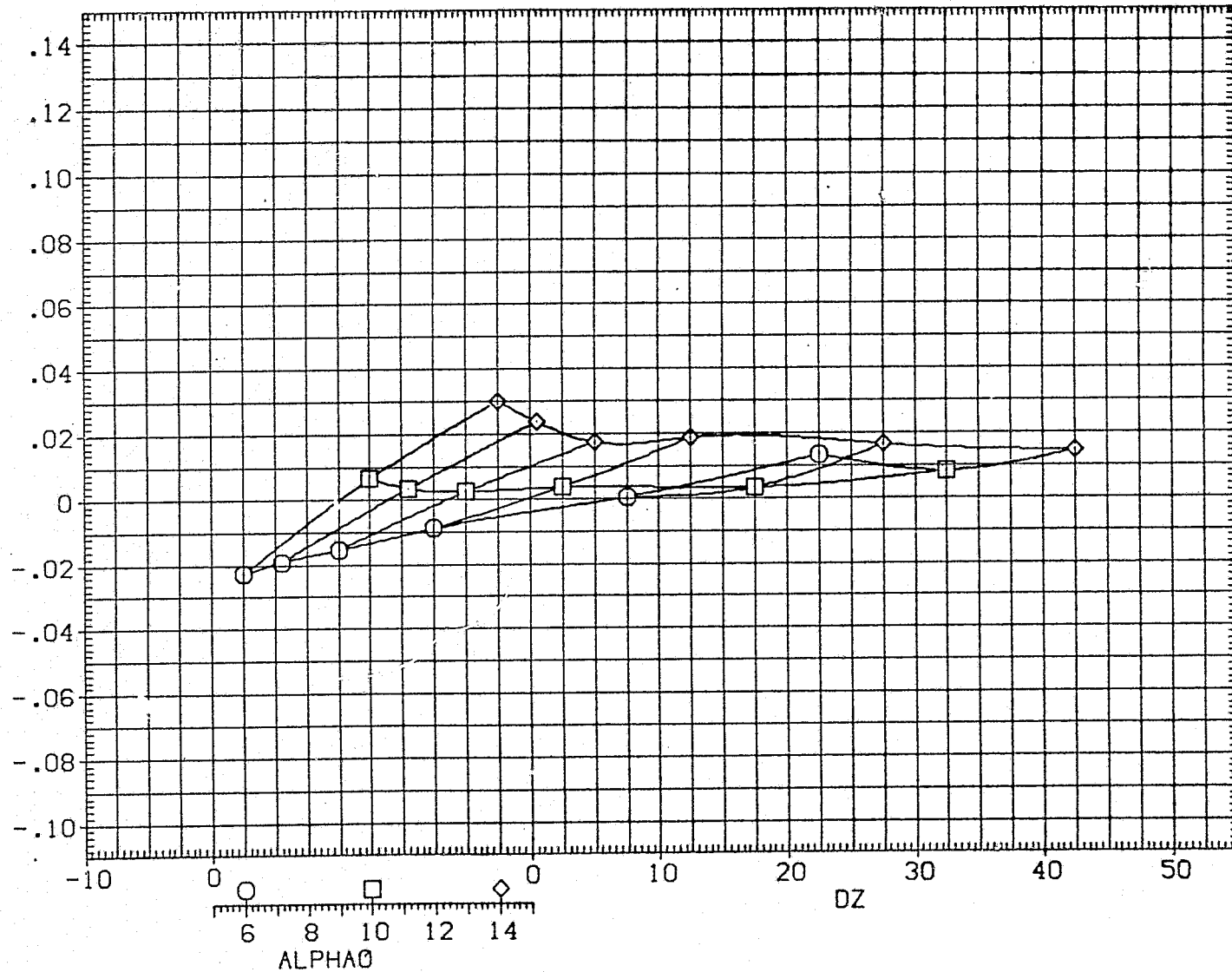


FIG. 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC = 0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL AXIAL FORCE COEFFICIENT, DCA

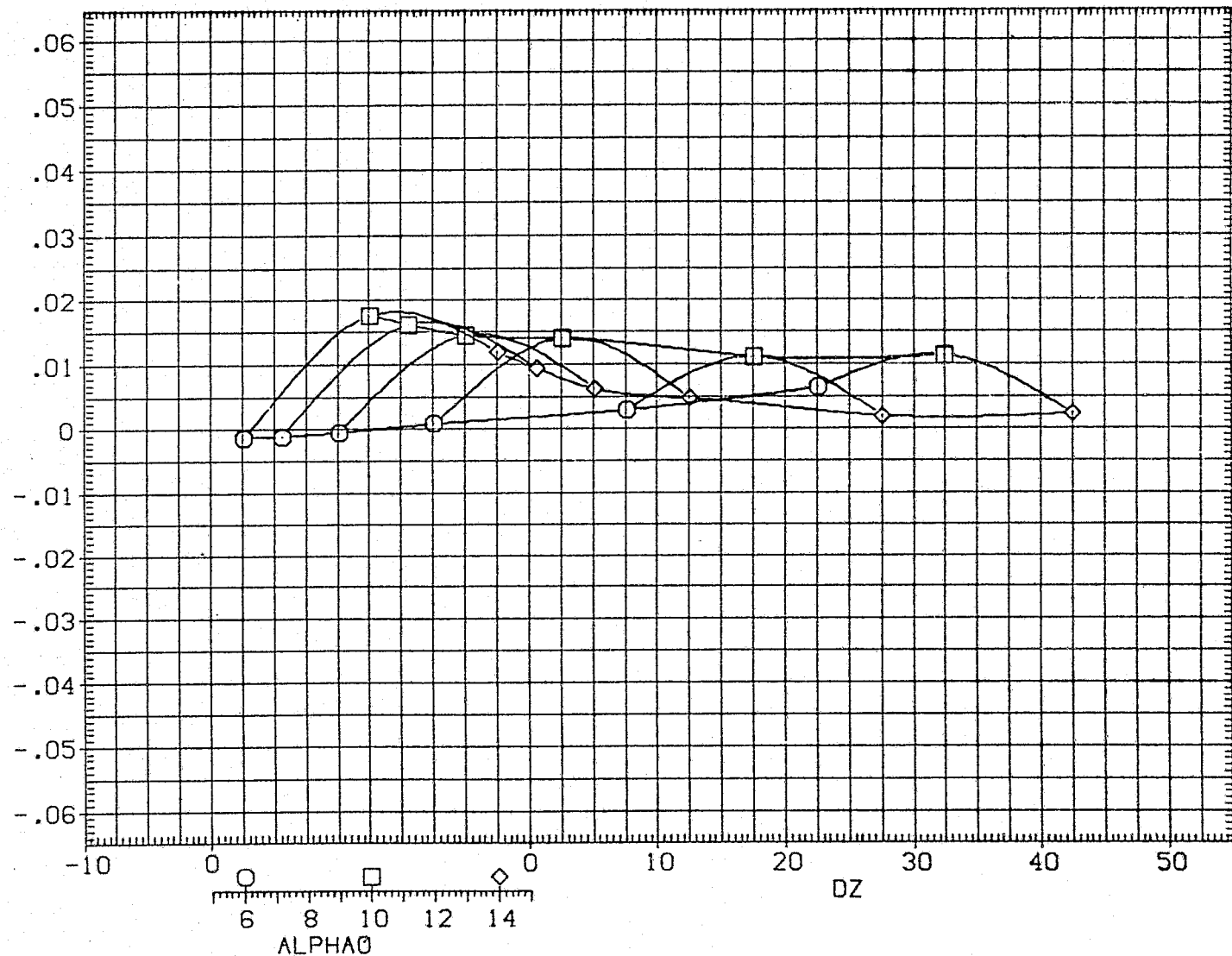


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (057 - 010) (7GN057)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT, DCY

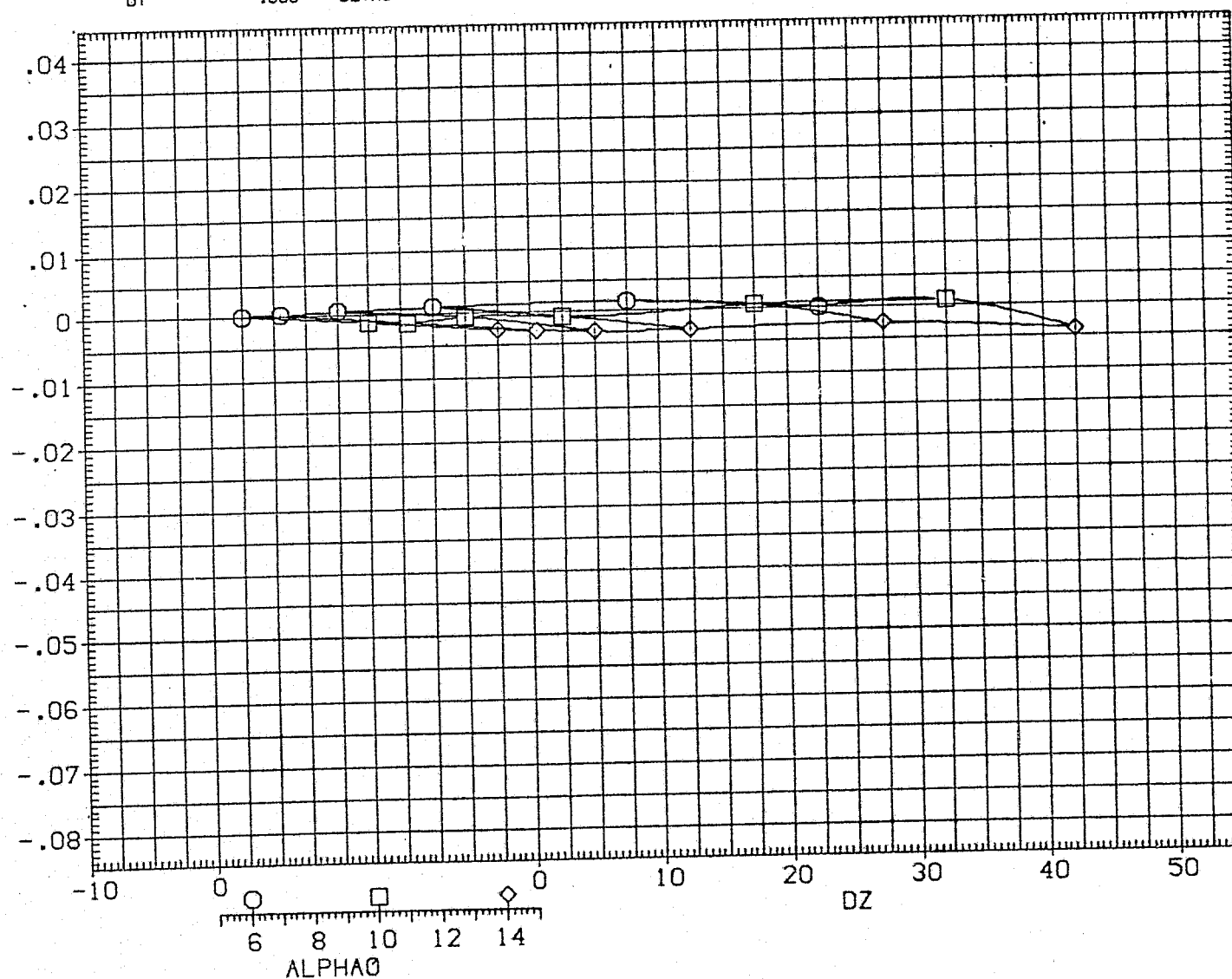


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SC.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
YMRP	1109.0000	IN.XC
YMRP	.0000	IN.YC
ZMRP	375.0000	IN.LC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT, DCYN. (BODY AXIS)

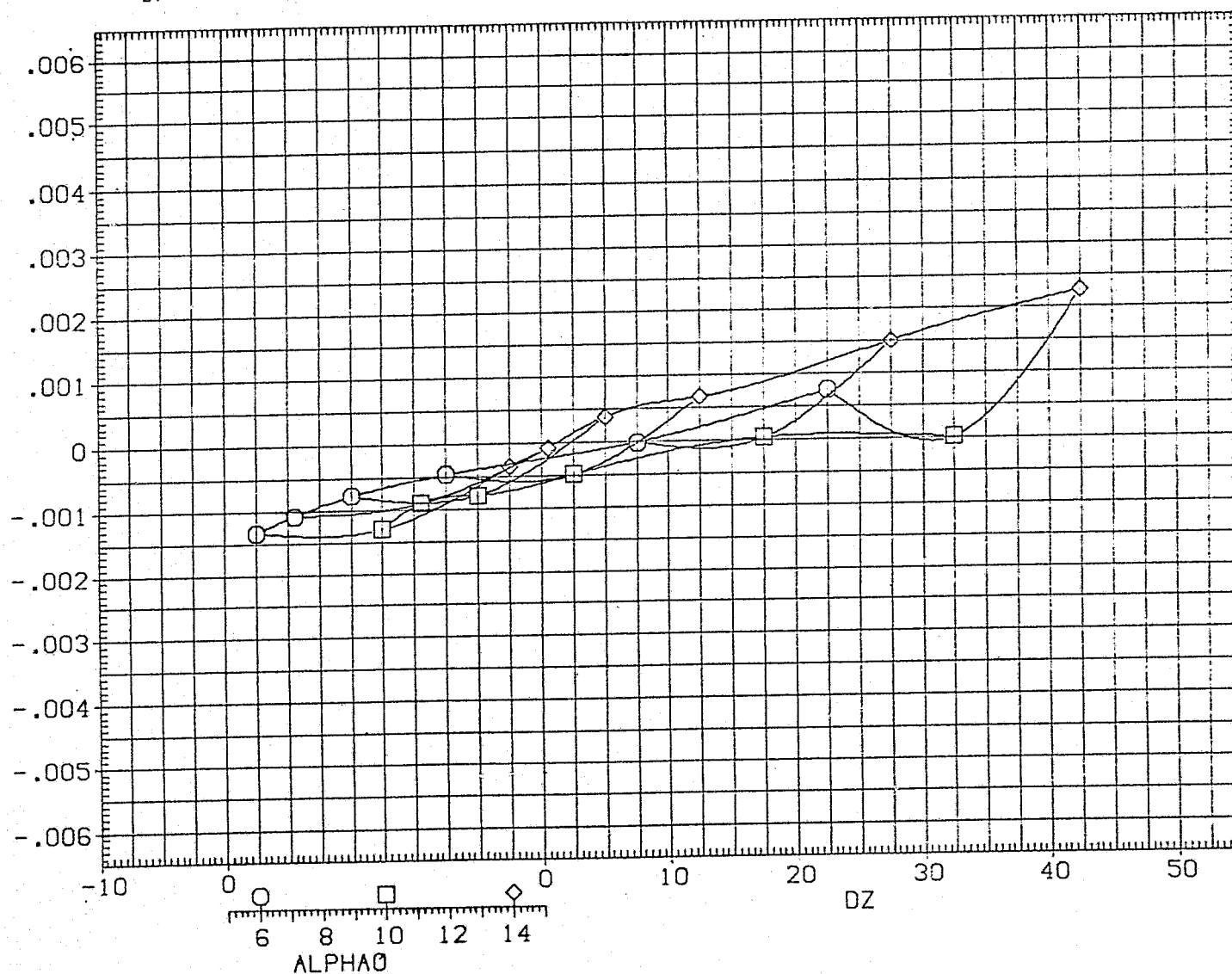


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (057 - 010)(76N057)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT, DCBL, (BODY AXIS)

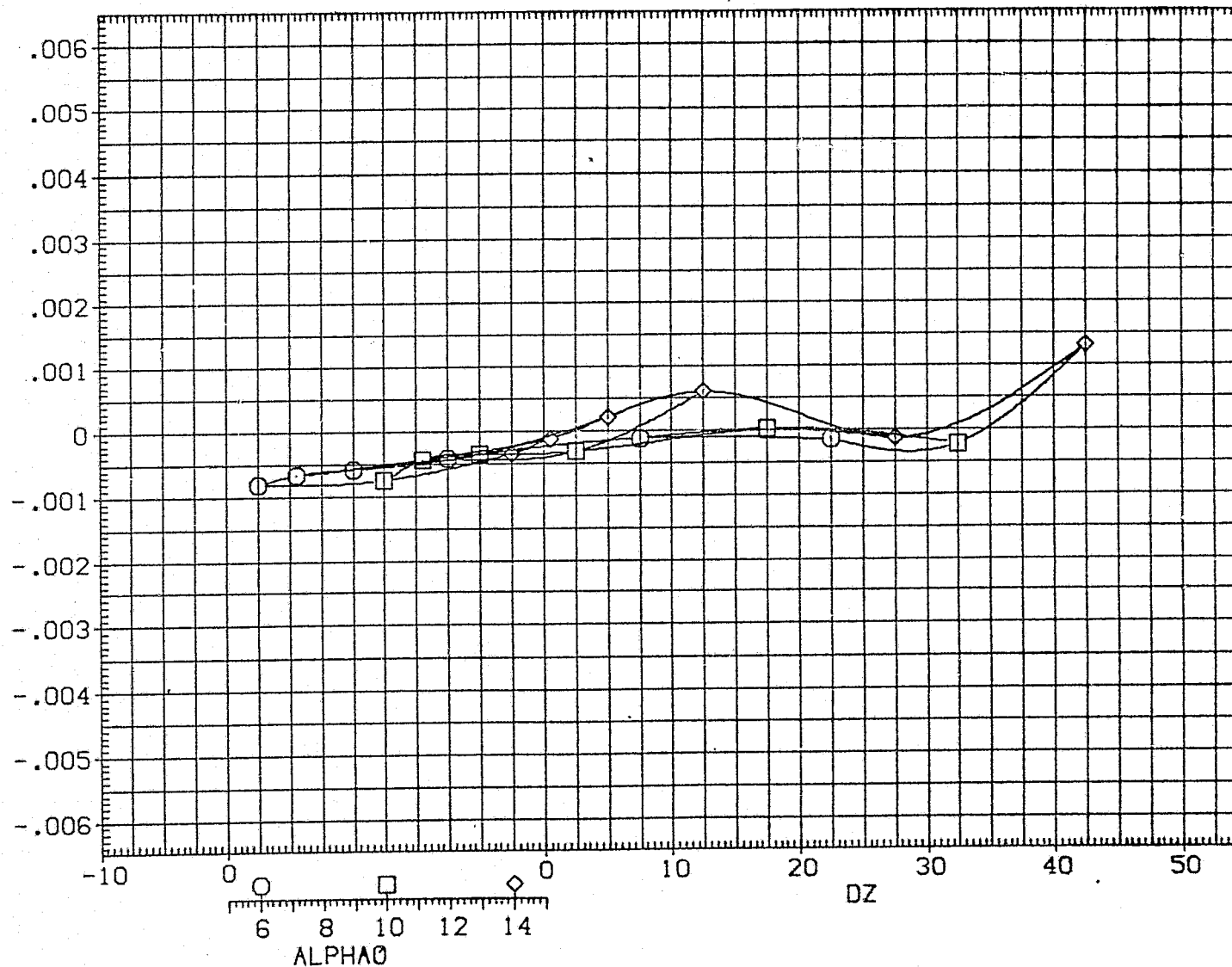


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-IB	.000	ELV-OB	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT, DCL

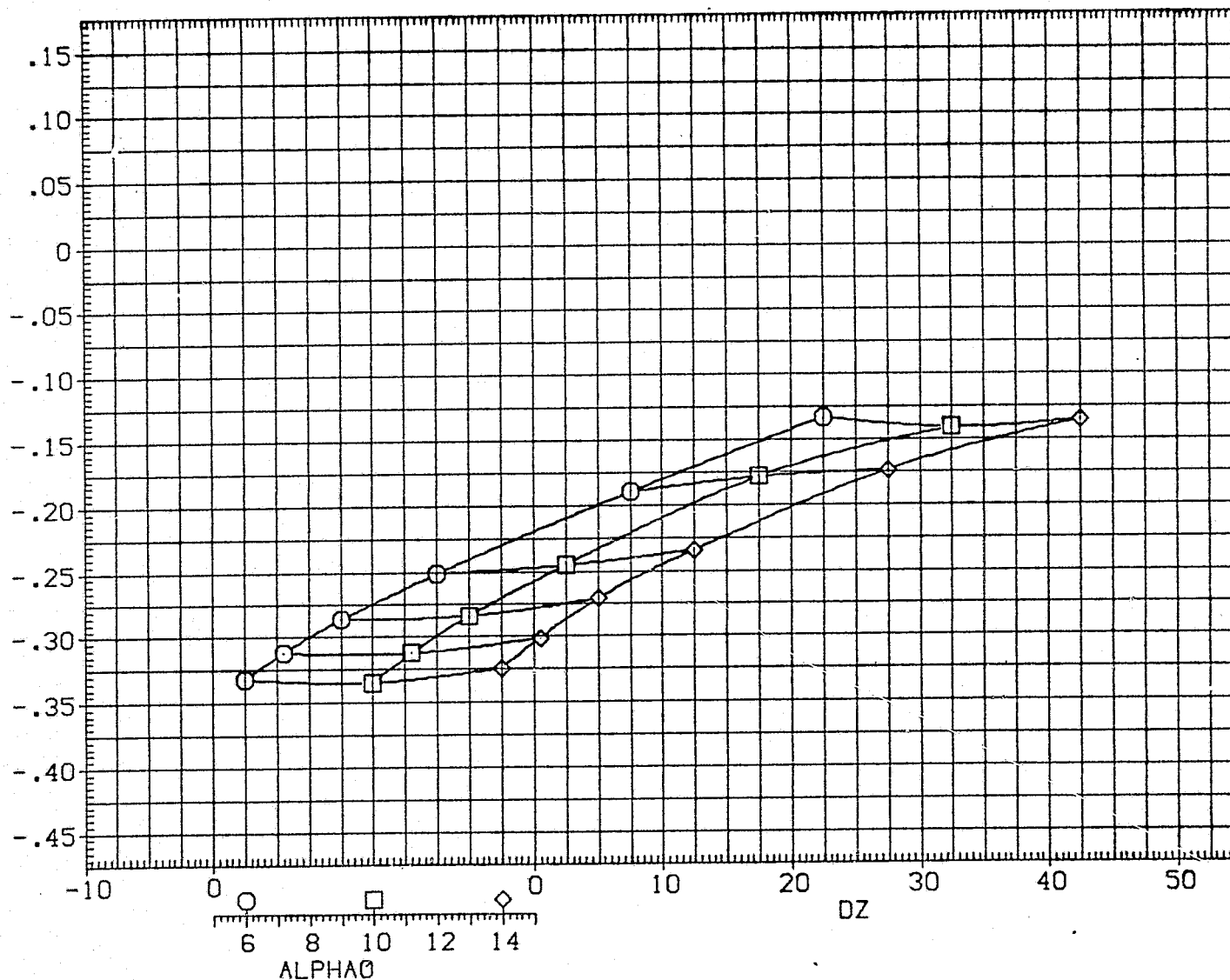


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)

CA20 (747/1 01 S1) - (01 S1) D/S (057 - 010)(7GN057)

PARAMETRIC VALUES			
ALPHAC	8.000	BETAC	.000
ELV-1B	.000	ELV-0B	3.000
ELEVON	5.000	MACH	.600
PHI	.000	DX	20.000
DY	.000	BETA0	.000

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN.X0
YMRP	.0000	IN.Y0
ZMRP	375.0000	IN.Z0
SCALE	.0300	

INCREMENTAL DRAG FORCE COEFFICIENT, DCD

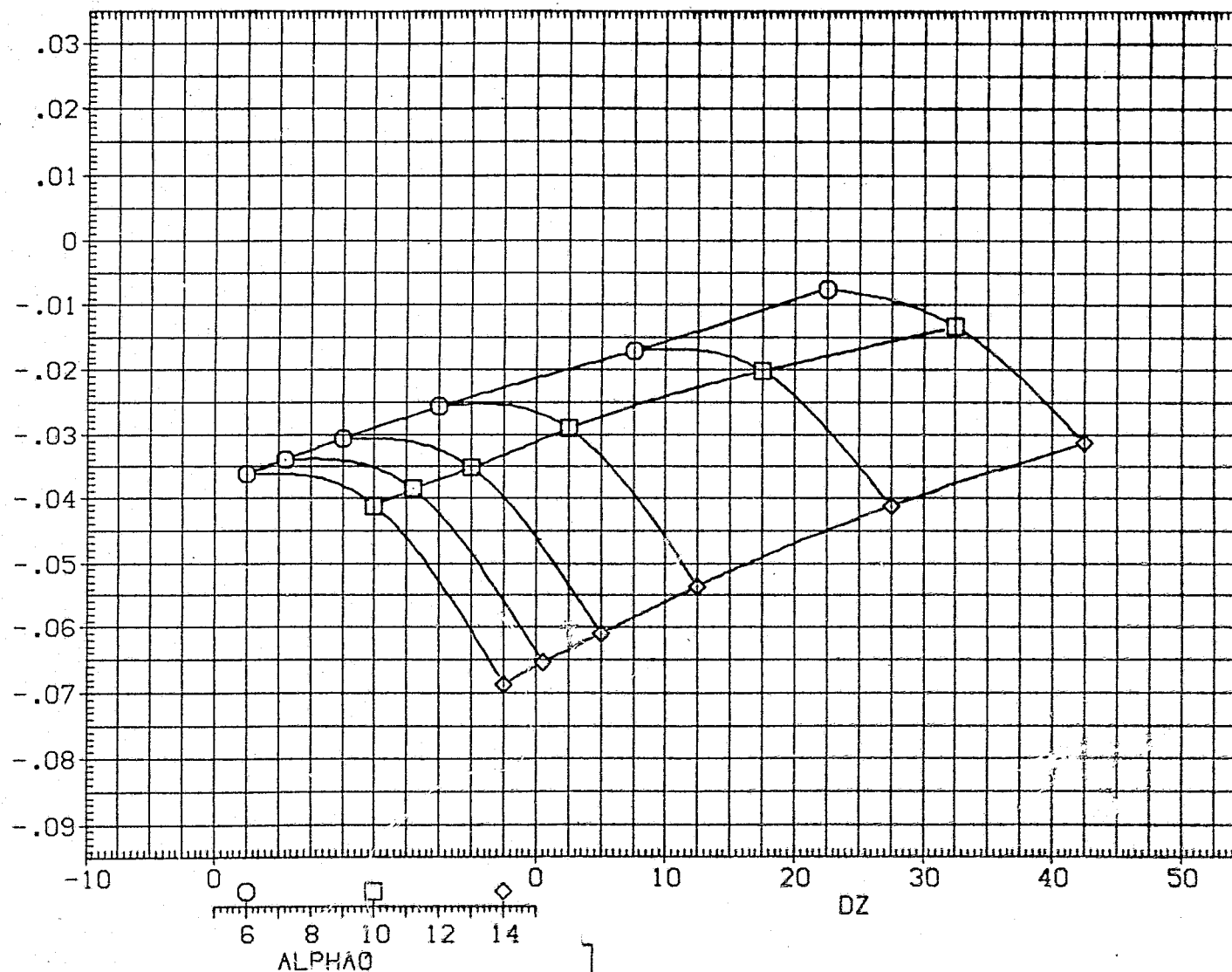


FIG 39 DELTA Z AND ALPHA0 BIVARIANT EFFECTS ON ORBITER (PHI, BETA0, BETAC =0)